**Legal tips to know** when you turn pro page 83

Better Homes and Gardens®

# WOOD®

THE WORLD'S LEADING WOODWORKING MAGAZINE
DECEMBER1997 ISSUE 101
http://www.woodmagazine.com

## MINI-LATHES

**See the latest test results**

page 50

**Beautiful, easy-to-build**

## Fireplace Surrounds

page 60

**CHRISTMAS CROWD-PLEASERS**

- Quilt hanger
- Nativity set
- Tabletop sleigh
- Scrollsaw snowflake
- Chickadee plaque
- Coffee table

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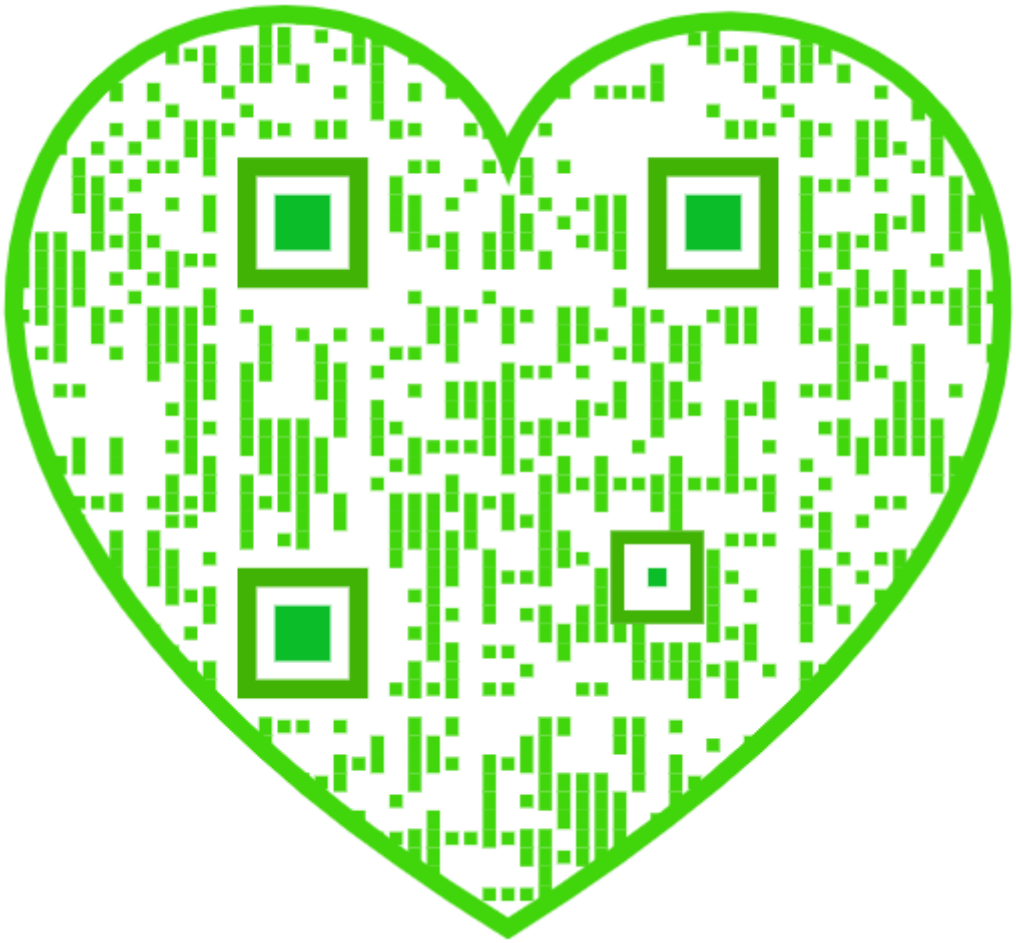

THE NEW DW708 12" SLIDING COMPOUND MITER SAW FROM DEWALT

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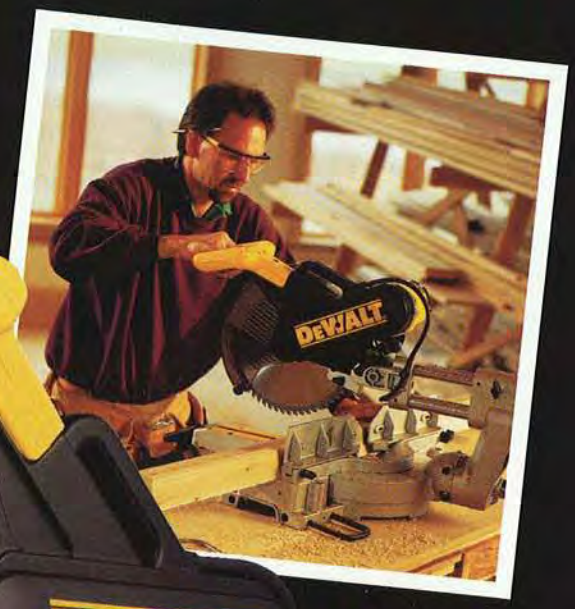


On the job with Kevin Knight & Co., Columbus, Ohio.

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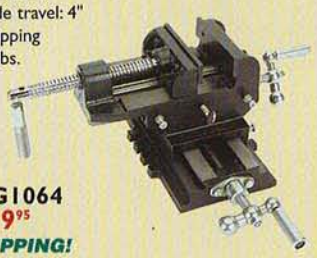

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ISSUE NO. 101 DECEMBER 1997

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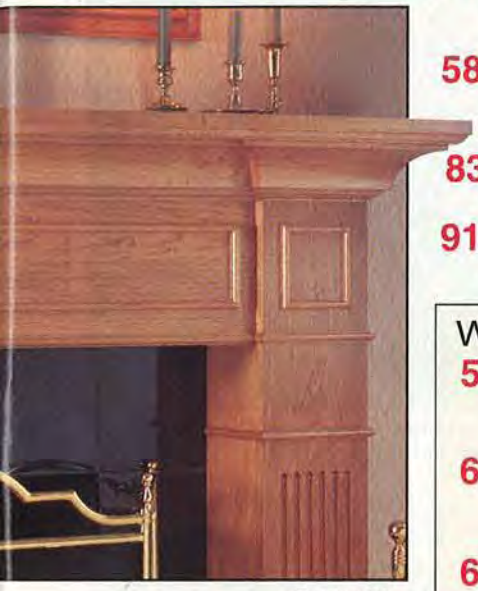

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*This issue's cover wood grain: buckeye*

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WOOD®
THE WORLD'S LEADING WOODWORKING MAGAZINE

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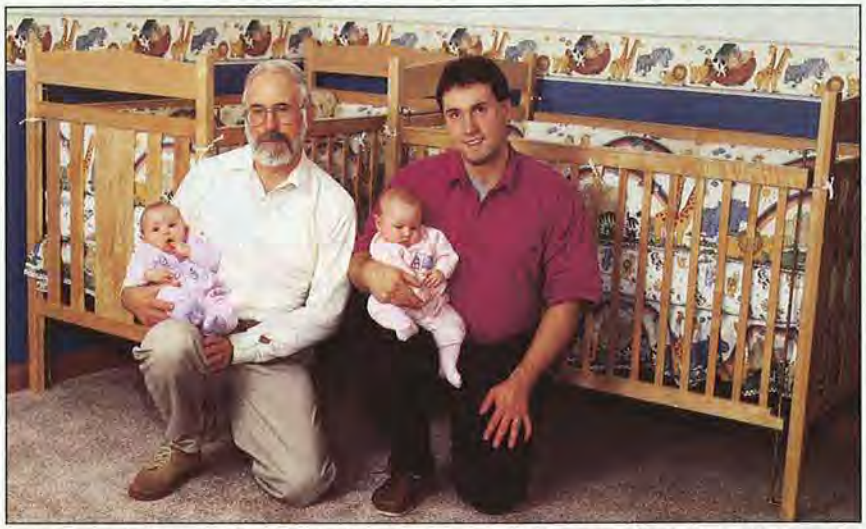
Shop tips always rate as one of the most popular features in *WOOD* magazine. But did you know you can find some great woodworking tips at *WOOD* ONLINE, too? From the home page, simply click on Shop Tips to see a collection of clever workshop tricks.

Check out *WOOD* on Tour, also. There, you'll find locations for upcoming Sears Hardware/*WOOD* magazine Woodworking Weekend Demonstrations. Find one near you, then stop by to see some terrific tips and techniques you can use.

THE EDITOR'S ANGLE

# TAG-TEAM WOODWORKING

## It's a Father/Son Event



***WOOD* magazine readers Arnie (left) and Roger Paye pose proudly with four of their prized possessions—Stephanie and Laura and their two cribs.**

The months leading up to the arrival of a baby always represent a special time in a family's life. And according to *WOOD* magazine reader Arnie Paye of Westfield, Mass., it's doubly exciting when your son, Roger, and daughter-in-law, Jackie, are expecting twins.

To help work off some of the nervous energy they felt during the waiting period, this industrious father/son team decided to get busy. They selected the Baby's First Bed project from issue 59, and (not surprisingly) made two of them.

Fortunately for Arnie and Roger, a family friend gave them enough maple boards, leftovers from a flooring job, to complete the projects. Arnie adds, "We did purchase some curly maple for the head- and footboards. The beautiful figure on them added just the right finishing touch.

"We also made a few minor design changes along the way. And we attached the maple slats to the rails with mortise-and-tenon joinery rather than the way you did it in the magazine. That was lots of extra work, but it was worth it."

Arnie describes his woodworking experience in glowing terms. "In addition to saving a lot of money, building the projects as a father/son team was a lot of fun. It brought us much closer together as a family unit, and who knows, the cribs may be an heirloom for the next generation."

In case you're wondering whether or not all this work paid big dividends, just take a look at the photo of Arnie, Roger, and the two bundles of joy—Stephanie and Laura—who were born November 1, 1996. Need I say more?

What's next on the docket for our fearless woodworking duo? They're currently working on the Happy Days High Chair project from issue 51. And yes, they're building two of them.

Larry Clayton

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# TALKING BACK

## A quick and quiet cyclone improvement

After living for a few months with the cyclone dust collector we featured in the November 1997 issue, we came up with a way to lower its noise level. Since most of the noise comes out of the exhaust, we fashioned a simple muffler that goes between the exhaust hose and the filter.

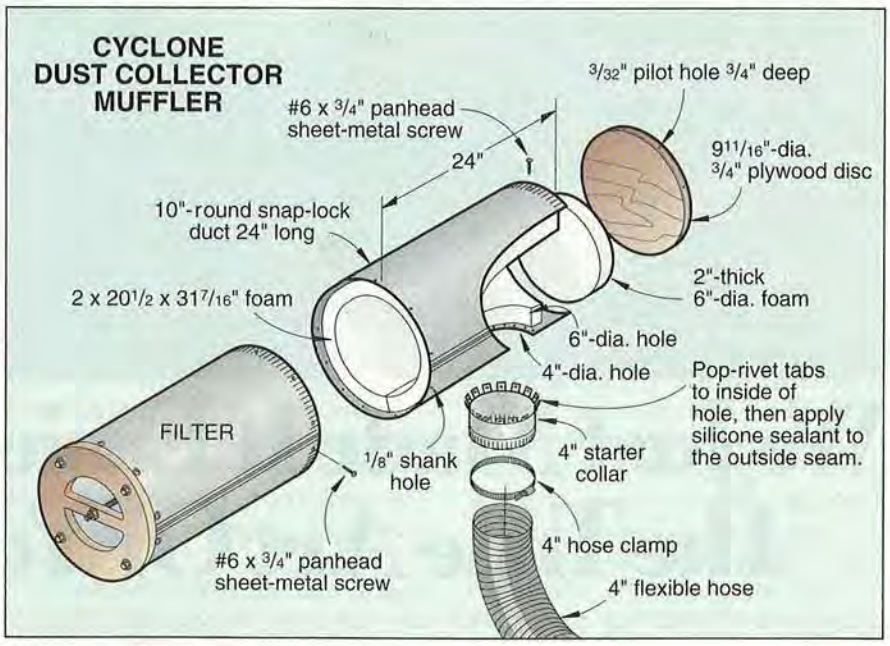
To build one for your own cyclone, first snap together a 24" length of 10" round duct. Mark a 4"-diameter hole with its center 5" from the crimped end. Cut the hole with metal snips, and install a 4" starter collar as shown *below*. Fasten a 9 11/16"-diameter disc of ¾" plywood inside the crimped end with sheet-metal screws. Seal the inside of the joint between the disc and duct with silicone sealant.

Buy a piece of 2×24×40" foam from your local fabric store. Cut a 2×23½×31 7/16" piece of foam, fit it into the duct, and mark the location of the inlet hole. Now, remove the foam, cut the inlet hole, and replace this liner. Cut a 6"-diameter foam disc and place it into the muffler and against the wood disc.

To install the muffler, remove the inlet assembly from the filter housing and fit the filter and muffler assemblies together. Fasten the crimped end of the filter to the plain end of the muffler with sheet-metal screws and aluminum foil tape. Hang the assembly in an appropriate location, such as between floor joists, and reconnect the hose from the blower.

We trust you will enjoy the reduction in decibels as much as we have.

*—Jan Svec, Assistant Design Editor/Project Builder*


CYCLONE DUST COLLECTOR MUFFLER
3/32" pilot hole 3/4" deep
#6 x 3/4" panhead sheet-metal screw
24"
9 11/16"-dia. 3/4" plywood disc
10"-round snap-lock duct 24" long
2 x 20 1/2 x 31 7/16" foam
2"-thick 6"-dia. foam
6"-dia. hole
4"-dia. hole
Pop-rivet tabs to inside of hole, then apply silicone sealant to the outside seam.
FILTER
1/8" shank hole
4" starter collar
4" hose clamp
#6 x 3/4" panhead sheet-metal screw
4" flexible hose

## Let us know what's on your mind

We welcome your comments, criticisms, suggestions, and yes, even compliments. We'll do our level best to respond, perhaps even on this page!

Write to us at: Talking Back, *WOOD* Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379. Send e-mail to: woodmail@woodmagazine.com

*Continued on page 10*

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*Better Homes and Gardens® WOOD® Magazine (Nov. '95)

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*Continued from page 8*

## Can I sell projects found in *WOOD*® magazine?

After I made several copies of the watch clock project from the September 1996 issue, a few of my friends suggested that I should make even more to sell. My question is this: Whose permission do I need, if anyone's, to legally make and sell *WOOD* magazine projects?

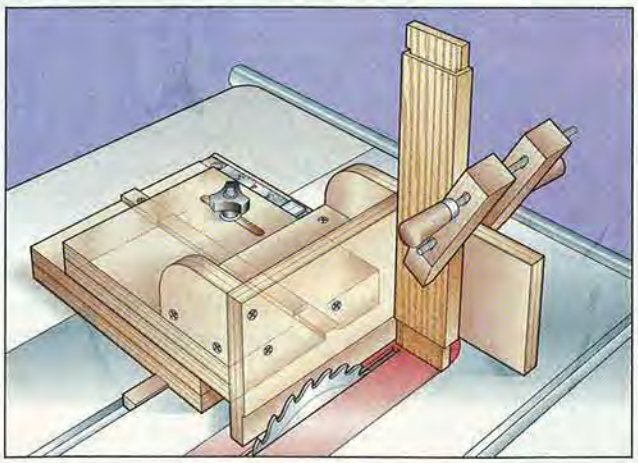
***—Fred Mosblech, St. Louis***

*That depends, Fred. Look at the end of the article for the project designer. If a member of the WOOD magazine staff created the design, go ahead and build as many as you like. You will find our names in the front of the magazine.*

*If, on the other hand, we purchased the publication rights from a fre-lance contributor, you may not legally profit from that person's design without the designer's permission. In the case of the watch clock, Denis Sutter, a freelance contributor, retains the rights to his design.*

## Thanks Bill White for a great jig

*In the June 1997 issue, we incorrectly credited Jim Downing for designing the "On-The-Money Tenoning Jig." The actual designer was reader Bill White, Williston, Vermont. Thanks, Bill.*



## Keep *WOOD* magazine turning

I'm a charter subscriber to *WOOD* magazine, and it's no accident that I plan to stay with you into the next century. After subscribing to 17 other magazines in the past 20 years, I have selected *WOOD* magazine as the best.

My friends, students, and fellow woodturners always ask me for the best source for lathe projects, and I always suggest *WOOD* magazine. Even so, you could do better. Therefore, I would like to encourage you to print more articles on woodturning.

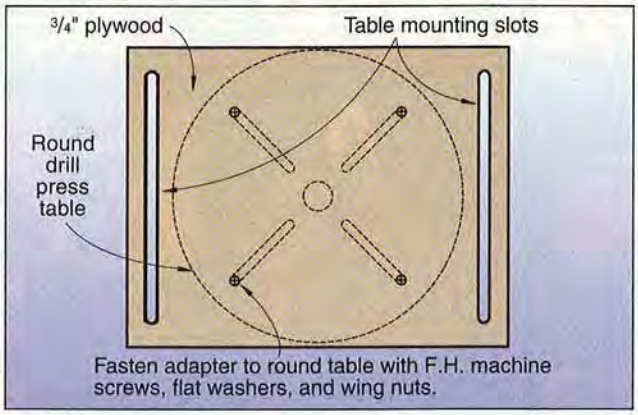
***—Walter Rissmeyer, Lakewood, N.J.***

## How to fit a square jig to a round table

The drill press table shown in the February 1996 issue is a great idea. However, my drill press has a round table as opposed to the rectangular table shown in the article. How can I adapt this jig for my drill press?

***—J.Y. Roy, Nash Creek, N.B., Canada***

*Most round tables have slots that radiate from the center of the table. This prevents the front-to-back movement of the jig on the table. To correct this problem, make the adapter plate shown in the drawing* below. *We suggest you use 3/4" fir plywood for this piece. Fasten the adapter to the round table with flathead machine screws, flat washers, and wing nuts.*


3/4" plywood
Table mounting slots
Round drill press table
Fasten adapter to round table with F.H. machine screws, flat washers, and wing nuts.

## An international reply coupon does the job

The April 1996 Finishing Touches mentioned sending a self-addressed, stamped envelope to Marsh Muckers Boatworks, Ashton, Ontario, Canada, for more information. This is okay for *WOOD* magazine's Canadian readers. However, U.S. residents will need to send an international reply coupon (purchased at most Post Offices for $1.05) along with the envelope.

***—David B. Eccles, Morro Bay, Calif.***

*Continued on page 12*

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*Continued from page 10*

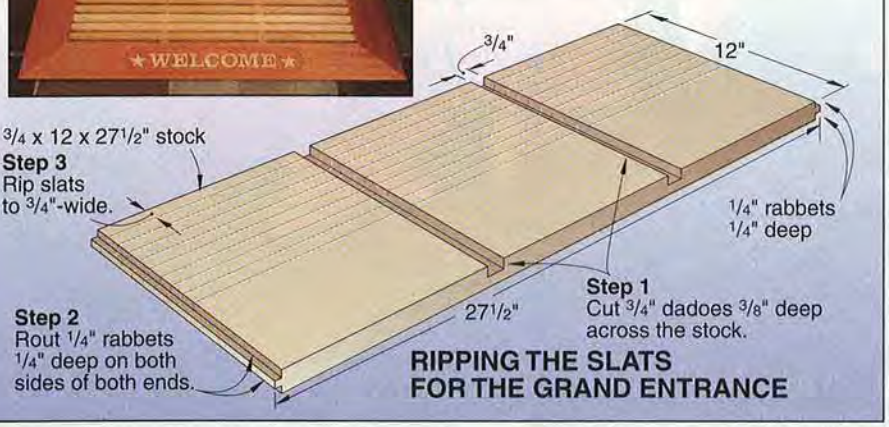
## Rout first, then rip

I liked your "Grand Entrance" project in the January 1997 issue so much that I've already made two of them. However, in at least one respect, your instructions for making the slats need simplifying.

Instead of ripping each slat and then making the shoulder cut for the tenon, make the tenons and dadoes as shown *below* before ripping the slat to width. You will need a piece of oak at least 12" wide (or two 6" boards) to make all the slats. This way, not only will the slats be much easier make, they will also be more uniform.

***—Robert Hatch, Lewiston, Maine***

*Routing first and ripping second, Bob, also avoids problems with tearout caused by routing across the grain of such narrow pieces.*


3/4"
12"
3/4 x 12 x 27 1/2" stock
Step 3
Rip slats to 3/4"-wide.
1/4" rabbets 1/4" deep
Step 1
Cut 3/4" dadoes 3/8" deep across the stock.
27 1/2"
Step 2
Rout 1/4" rabbets 1/4" deep on both sides of both ends.

**RIPPING THE SLATS FOR THE GRAND ENTRANCE**

## Hemlock's top tells all

I enjoyed the "Western Hemlock" article in the January 1997 issue, especially since I live in the Pacific Northwest. However, both the writer and artist missed the most identifiable feature of western hemlock—the whip-like top. If you know about this distinguishing trait, you can pick out the hemlocks easily from a mixed stand of hemlock and fir.

***—Gary Carkner, Mission, B.C.***

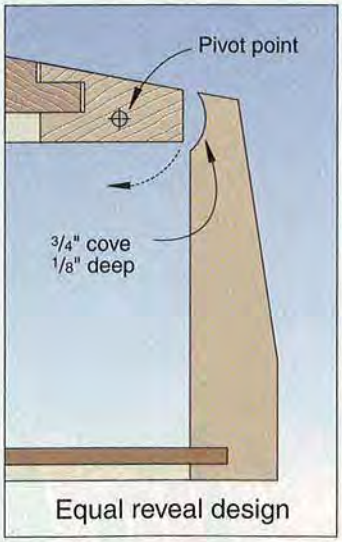
*Like you, Gary, field botanists and foresters often use the hemlock's "droop ing tip," shown in the illustration* right, *to identify it at a distance. Thanks for the tip.*

## Closing the gap

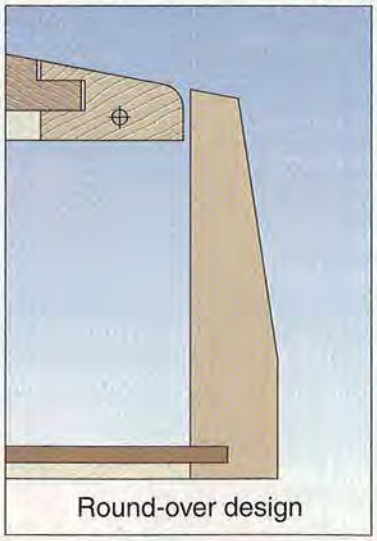
I want to comment on a useful technique for Andrew Costine's "Beveled Beauty" that appears in the December 1996 issue. His plans call for a ¼" round-over on the rear edge of the lid so it clears the carcase when opening and closing. However, if you like an even reveal around all sides of an inset lid, I have a simple solution.

When I build this "beauty" or any other design with an "inserted" lid, I use a roundnose bit to make a cove in the carcase as shown *below*. This cove takes care of the movement problem and allows the reveal to remain uniform on all sides.

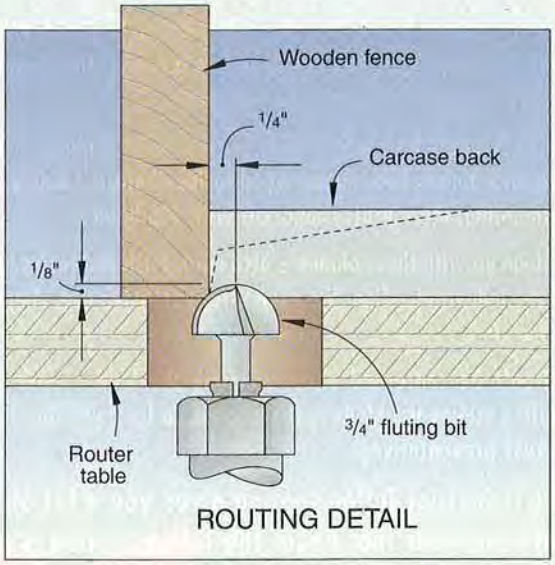
***—Robert Spalter, Lake Worth, Fla.***




Equal reveal design



Round-over design

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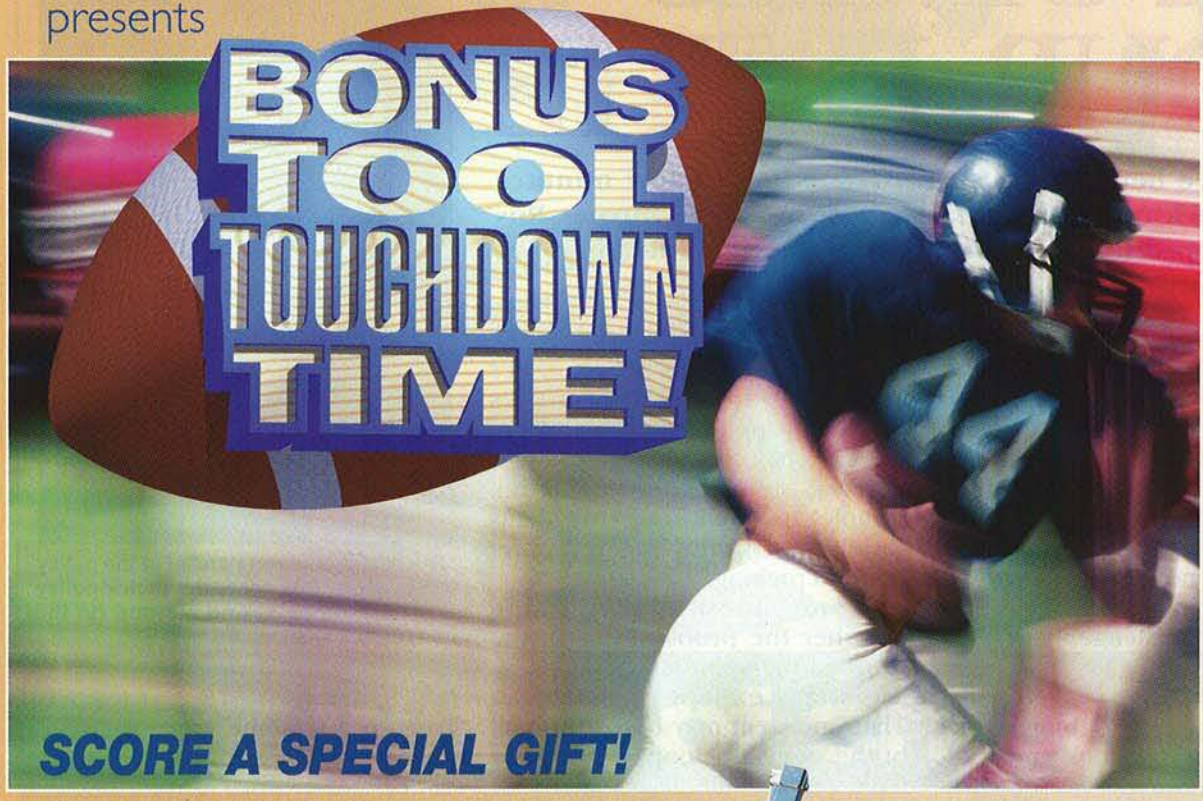


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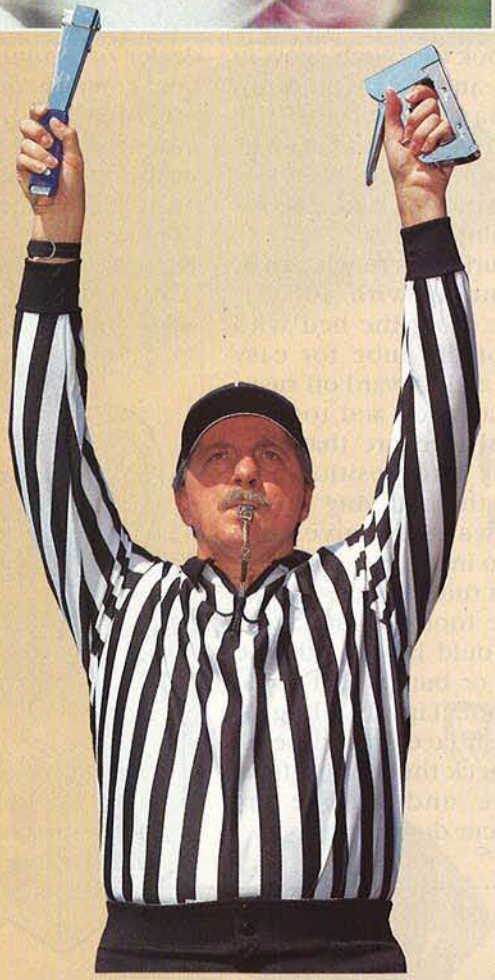

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# A PRO TURNER'S TIPS FOR TUNING YOUR LATHE

**For carefree between-centers turning, take a few minutes first to check out your lathe. Professional woodturner Rus Hurt developed these simple steps for tuning mini-lathes, but you can apply them to any lathe.**

Turning small objects between centers on a small lathe demands precision—stock may be turned down to a wall thickness of 1/16" or less for some pen and pencil designs. You'll have fits trying to achieve that kind of accuracy on a lathe that doesn't run true.

Here are some things you can do to help your mini-lathe meet the small-turning challenge.

## Let things slide

First, make sure everything works smoothly. The tailstock and toolrest should slide easily along the bed. If not, look for rough spots in the castings and clean them up with sandpaper or light file strokes. Be careful not to file nicks or low spots into the bed. The bed must remain flat and true for accurate turning.

If the bed surface is rough, lap it by block-sanding with 400-grit wet abrasive. Coat the bed with paste wax or dry lube for easy adjustments, and to ward off rust.

Once the tailstock and toolrest slide smoothly, ensure that they lock securely into position anywhere along the bed. Any sloppiness or unwanted movement translates into inaccurate turnings, perhaps even ruined ones.

Inspect the toolrest itself, too. The edge should be smooth and free of burrs or bumps that could catch the tool. Lightly filing or sanding the surface should be all you need. Check the toolrest from time to time, and remove any nicks that occur during use.

## Check headstock and belt

If your lathe takes Morse taper centers and other accessories (such as a pen-turning mandrel), check the fit of each part's tapered stem in the headstock spindle's tapered bore. The stems should seat firmly into the bore, with no rocking.

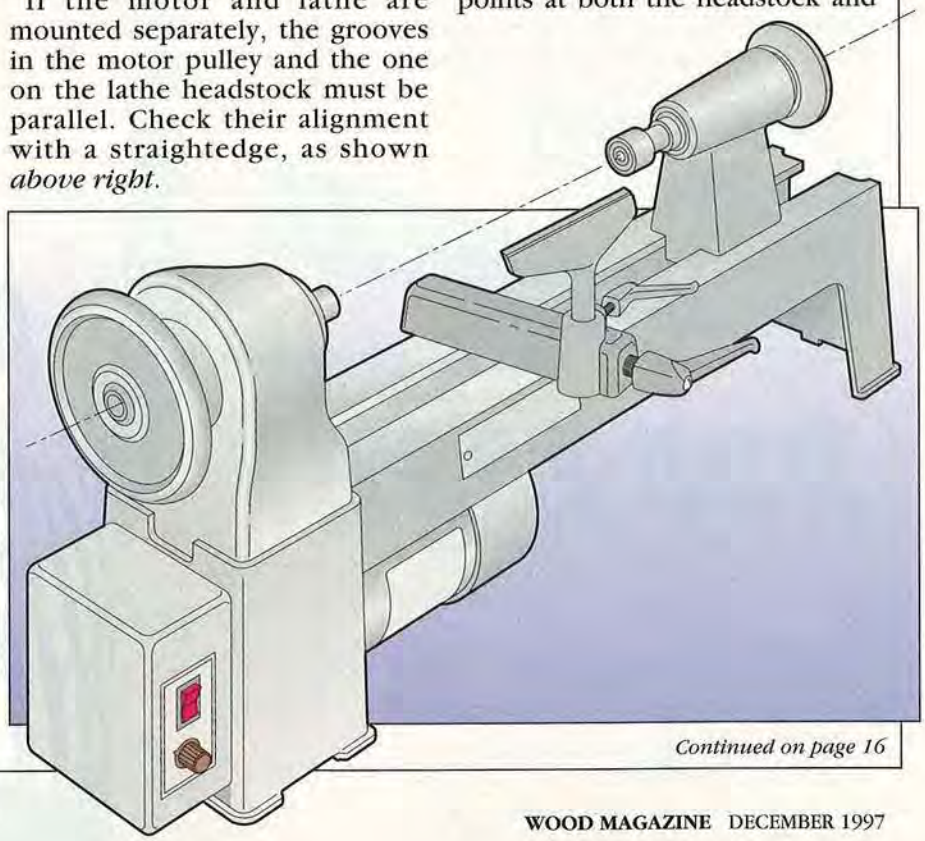
If one doesn't, determine whether the problem lies in the stem or the spindle bore. (Do all the stems except one fit fine? That one stem may be bad. Do all of the stems fit sloppily? You may have a faulty spindle.) Contact the dealer or manufacturer about suspect components.

If the motor and lathe are mounted separately, the grooves in the motor pulley and the one on the lathe headstock must be parallel. Check their alignment with a straightedge, as shown *above right*.

**The belt should run parallel to the pulley grooves. In this case, the motor pulley (top) should be moved outward (to the left) on the shaft.**

## Align the centers

To turn a straight, true cylinder, the lathe's drive center and tail center must spin on the same axis, as shown *below*. To check your lathe, install centers with points at both the headstock and



*Continued on page 16*

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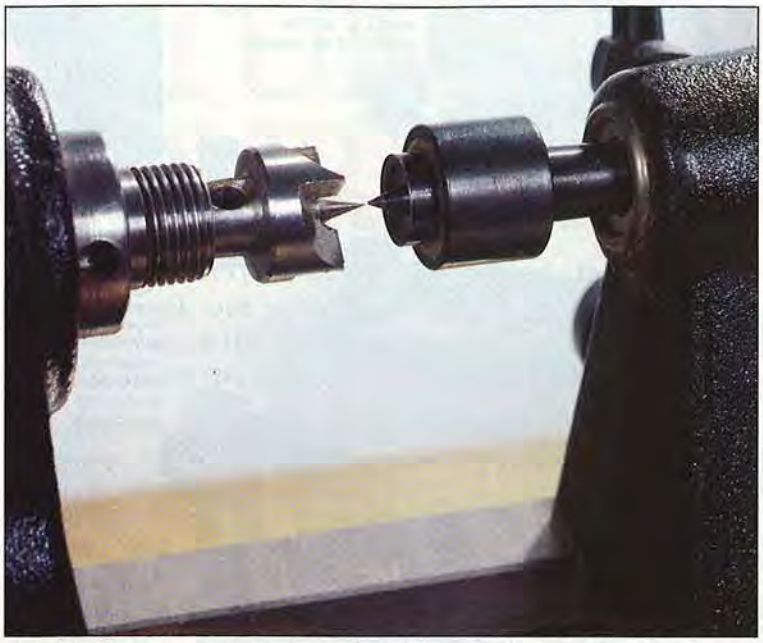
# TUNING YOUR LATHE

*Continued from page 14*



**When the points on the centers meet exactly and run on the same axis, you'll be able to turn a cylinder accurately on the lathe.**

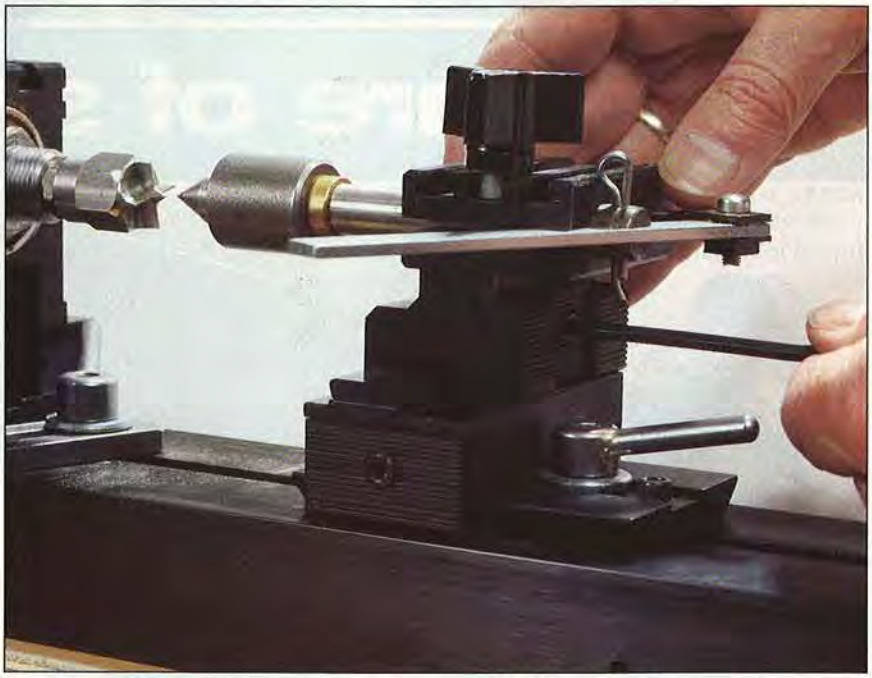
**Punch marks raise small rings of metal around the depression, raising the tailstock slightly. Sliding will wear the rings down after a while.**

tailstock. (For example: mount a spur drive center with a central point on the headstock and a pointed center on the tail stock.)

Slide the tailstock as close as possible to the headstock, and tighten it in the normal manner. Then, examine the points on the centers; they should meet exactly, as shown *above*. And, they should meet squarely along the same axis, shown in the drawing, rather than coming together at an angle.

If they don't meet (more likely on a used lathe than a new one), adjust either the headstock or the tailstock to bring them into alignment. Which to adjust depends on the situation.

- If the headstock center is low in relation to the tailstock center, it's preferable to raise the headstock. Thin metal shims between the headstock and the bed will do it.
- If the tailstock center is low in relation to the drive center, raise the tailstock. To gain a small height increase (which should be all you need), centerpunch the sliding surface of the tailstock, shown *top right*. Punching upsets a small ridge or ring around the depression. A series of these punch marks on the seating surface raises the tailstock.
- If the centers are offset to either side, make the adjustment wherever it's easier. Often, the lathe's design allows you to move the headstock slightly to either side.



**Some lathes provide for easy lateral tailstock adjustment. The feature allows you to offset the tailstock for oval turning.**

Lateral tailstock adjustment (useful when you want oval turnings) is an integral feature of many tools based on miniature metal-turning lathes, such as the Klein *above*.

Photographs: Hetherington Photography
Illustration: Kim Downing

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# How to cut a sliding dovetail

## A super-strong joint that allows wood to move

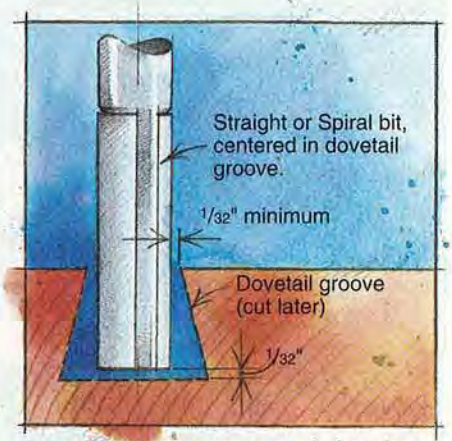
Believe it or not, with a router table and a couple of bits you can make tight- *or* loose-fitting dovetail joints. As you'll see, both types can work to your advantage.

Tight-fitting versions like those *below*, hold workpieces firmly together without fasteners. But, such joints allow pieces with opposing grain directions to move slightly. So, the joint won't "explode" as one piece "grows" in opposition to the other during changes in seasonal humidity.

Loose-fitting dovetails, like those shown *bottom*, don't form a fixed joint. Rather, they keep the workpieces in contact but allow you to slide one piece along the other.

In the following steps we'll show how to make a tight-fitting joint. Loose-fitting joints go together in the same way, but with these you leave clearance between the dovetail and the groove that holds it. (Under humid conditions leave about 1/64" clearance. During dry times, allow about 1/32" clearance so that the dovetail doesn't bind up when humidity increases.)

Typically, you make the "tail" of the dovetail the same width as the thickness of the stock it is cut in. For example, in the following steps we'll show how to join a ½"-thick drawer side to a ¾"-thick drawer front. We'll cut the dovetail groove in the drawer front with a ½" dovetail bit (a bit that is ½" wide at its wide end). Then, we'll cut a ½"-wide tail in the drawer side. Here's how:




**1** Mark the center of the dovetail groove on your workpiece. Then, set up your router table fence so that the cut falls exactly on center. (With large workpieces use a handheld router with a straightedge.)

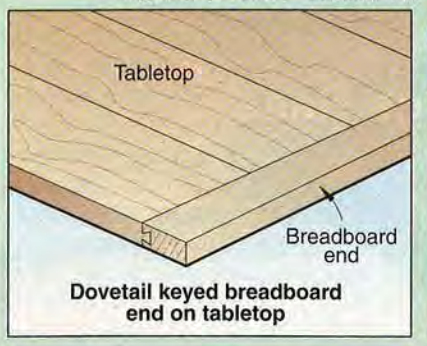
Now, put a straight or spiral bit into your router. As shown *above*, this bit should be at least 1/16" narrower than the narrowest part of the dovetail cut to come later. For example, in ¾"-thick stock you would typically cut a ⅜"-deep dovetail groove with 14° walls. In this example, you would use a ¼" straight or spiral bit set 11/32" deep.

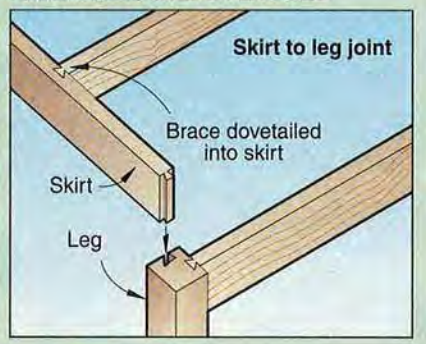
Hog out most of the groove material. Back cuts with scrap to prevent chip-out.

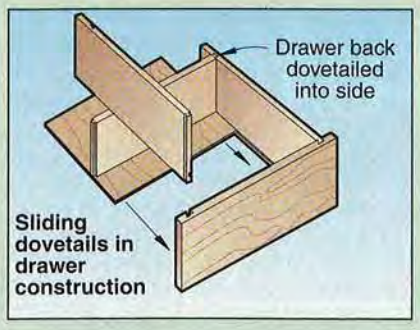
***Note:*** *Perform Step 1 on all of your workpieces before going to Step 2. Do Step 2 with all of your pieces before performing Step 3.*

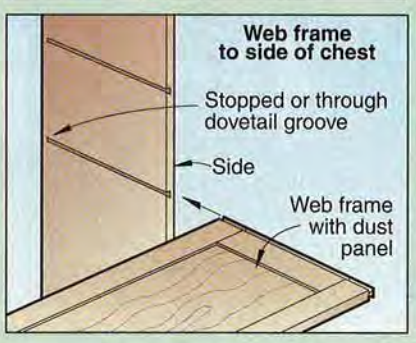
*Continued on page 20*

**EXAMPLES OF TIGHT-FITTING SLIDING DOVETAILS**

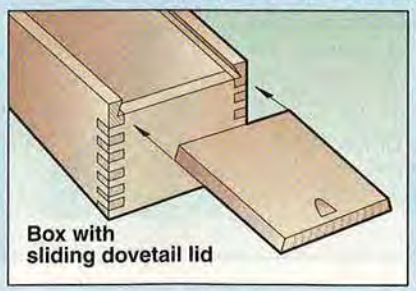



**EXAMPLES OF LOOSE-FITTING SLIDING DOVETAILS**



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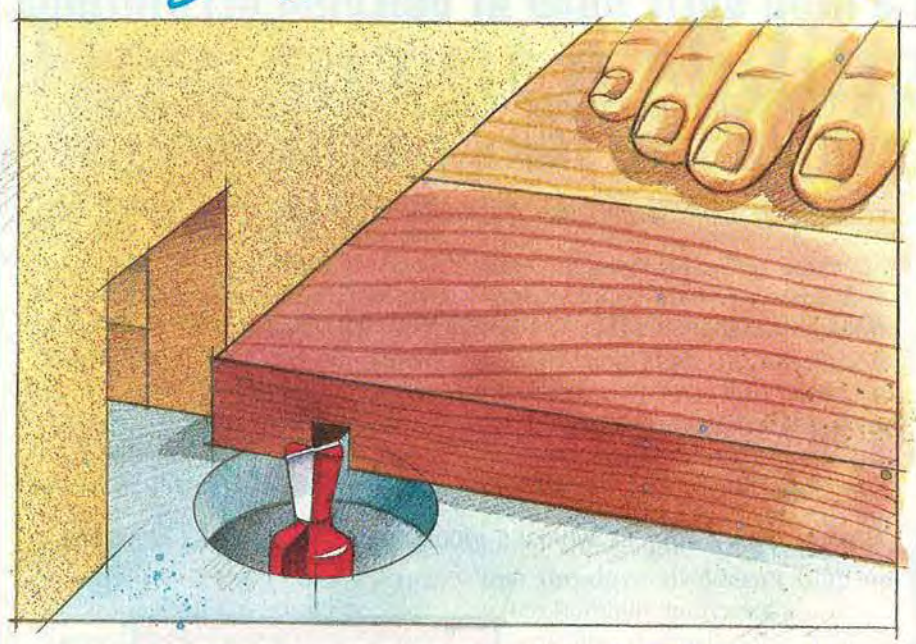
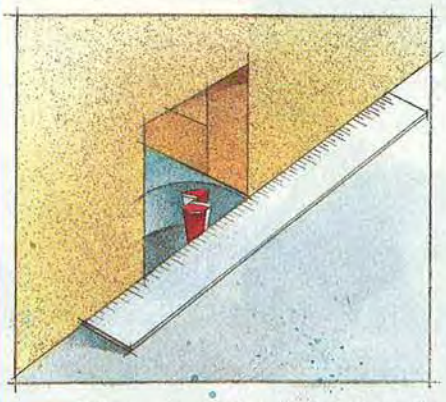
*Continued from page 18*

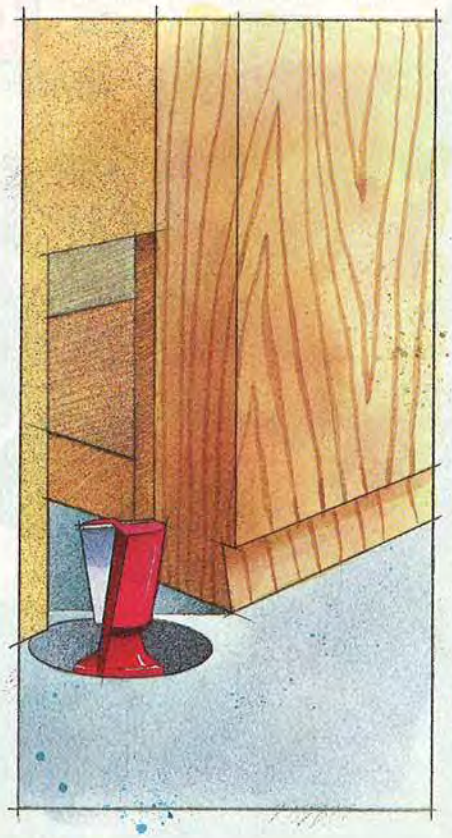


2 Install the dovetail bit in your router, and adjust it for full cutting depth. Leave your fence, straightedge, or edge guide adjusted where it was for Step 1. Make the cut, using a backing scrap as described in Step 1.

***Note:*** *Perform the following steps in scrap stock to test the accuracy of your cuts. Use a router table with a fence at least 12" high for workpiece stability.*

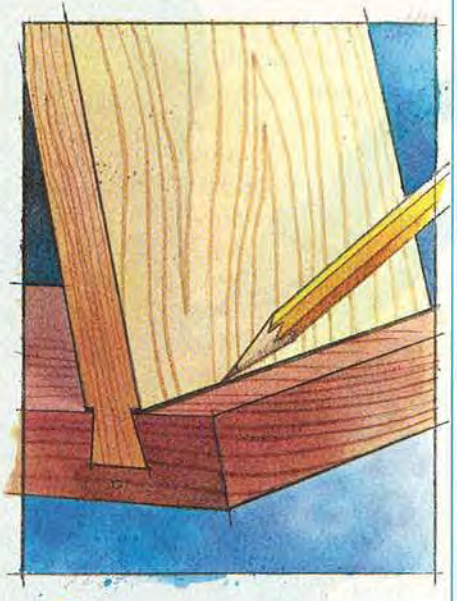


3 Now, cut the tails that fit into the grooves. Leave the dovetail bit at the same cutting depth as in Step 2. As shown *above*, lay a rule on your router table, and adjust the fence so it lines up with the cutting edge of the dovetail bit at tabletop height.



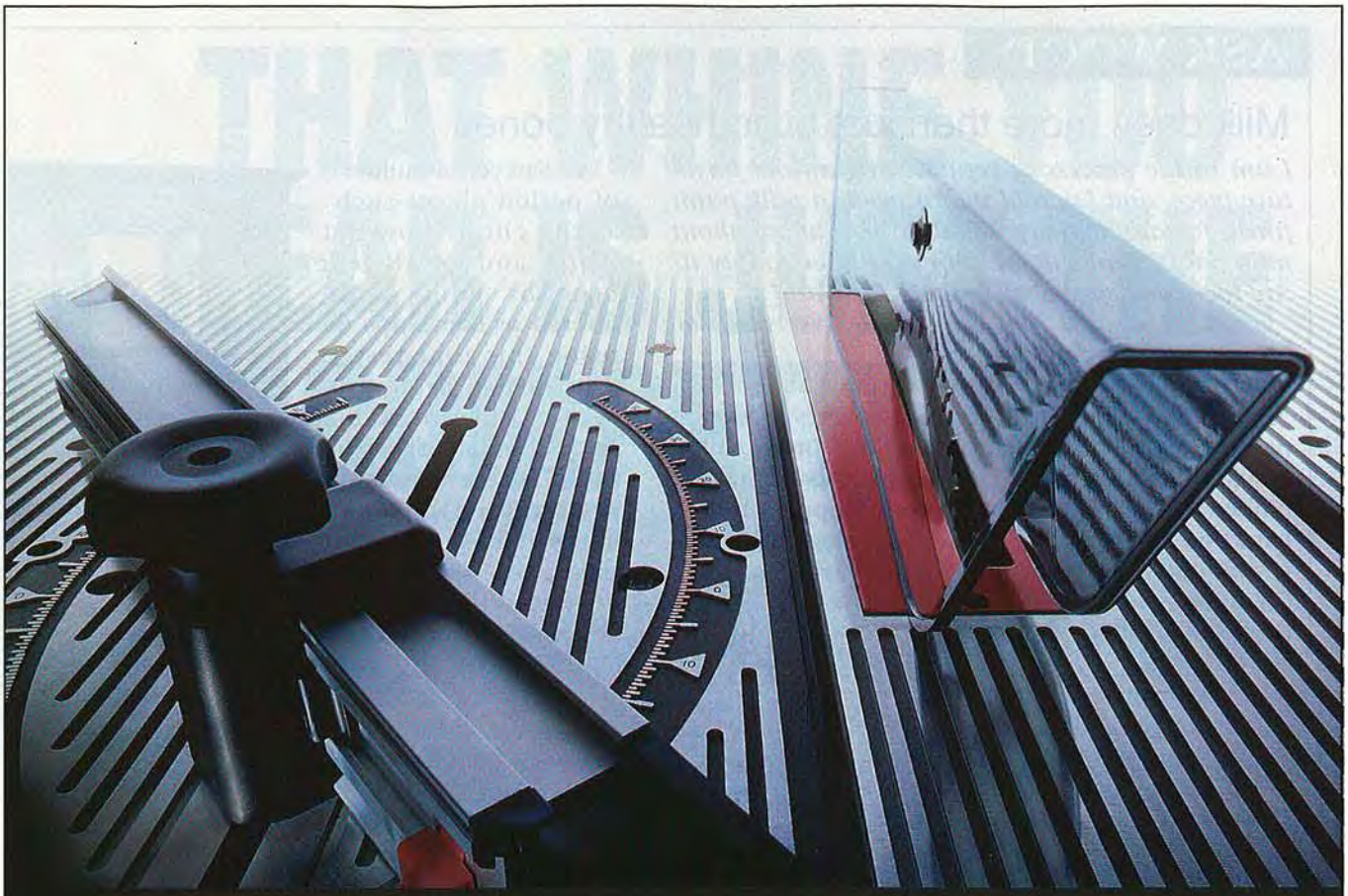
4 Stand the workpiece on end, with either face against the fence. Position a scrap block behind it. Cut one side of the tail, rotate the workpiece so the opposite side is against the fence, and cut the other side of the tail.

5 Test the fit of the dovetail in its groove. You should be able to push the tail into the groove using firm hand pressure. Dovetails over 6" long may require a gentle tap or two with a rubber mallet. If you have to pound the joint together with firm mallet blows the joint is too tight and could fail eventually.



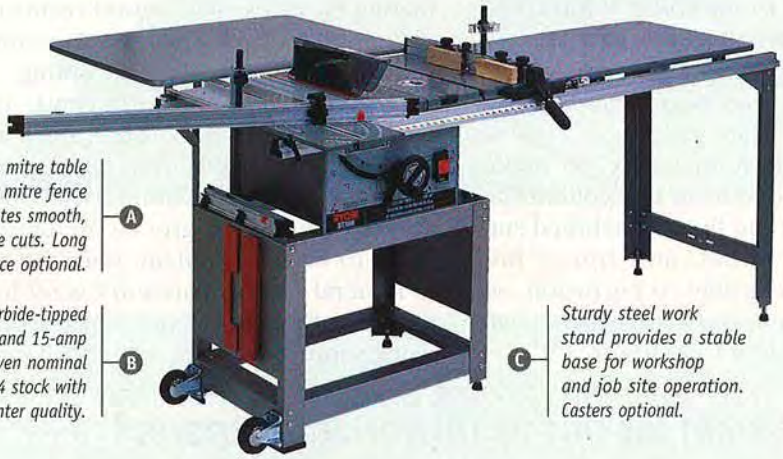
6 You may have to adjust the width of the tail by moving the fence in or out. If you find a gap between the workpieces as shown *above*, lower the bit slightly and recut the dovetail. If you see a gap at the bottom of the groove, raise the bit.

Written by Bill Krier with Jan Svec  Illustrations: Brian Jensen



**WE'RE NOT SAYING THE HEAVENS OPENED UP THE MOMENT THE BT3000 WAS CREATED. THEN AGAIN, IT WAS RATHER BRIGHT THAT DAY.**

[ Shown with optional accessories. ]



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# ASK WOOD

## Milk does more than just build healthy bones

*I am in the process of refurbishing an old furniture piece, and I'm told that it needs a milk paint finish for authenticity. What do you know about milk paint? Can I make it or do I have to buy it? Are there any special techniques for using it?*

***—Gary Hickox, West Plains, Mo.***

Milk paint has been around for a long time, Gary. Ancient Egyptians and even cave painters used milk paint. It works because of a milk protein called casein that acts as a binder. In fact, it's such a good binder that even the best modern strippers have a hard time removing it. So, milk paint has authenticity *and* durability going for it.

You can make your own milk paint by following the recipe shown *below.*

1 qt. whole milk or buttermilk
½ cup slaked (hydrated) lime (get at farm or concrete supply stores)
¼ cup boiled linseed oil
1 tablespoon corn starch
1 to 1½ lbs. of inert powdered pigment or color (available at art supply stores

*Let the mixture sit in a refrigerator overnight. Before using, strain it through cheese cloth. Stir frequently and thin with additional milk.*

Lee Sawyer, a builder of period pieces such as the chest shown at *right*, and an 18-year user of milk paint, offered us some tips on using this time-tested finish. First, it goes on like any other paint, but has a short shelf life (no more than two days if refrigerated). Next, since it is a dead flat paint, you will need to seal it with either a water-based acrylic or a light Danish oil for washability. To get that distressed look, you either sand it and then seal it, or wet-sand with the Danish oil.

One company offers a pre-mixed milk paint powder ($8.50/pint, $14.95/quart) that you mix with water. The maker, Charles Thibeau, swears that his paint is totally safe and washable. For more information, contact The Old Fashioned Milk Paint Company at 508/448-6336, or through its website at: www.milkpaint.com.

## Stuck in the collet again

*I have a router that works great except for one little problem—the bits stick in the collet. What causes the problem? And, is there something I can do so I don't have to keep "popping" the bits loose?*

***—Larry Dierks, Riverton, Wyo.***

Quite a few things can happen, Larry, to make router bits difficult to remove from the collet. The problem usually starts with the finely machined surfaces of the arbor shaft, collet, and router bit. These parts are highly susceptible to corrosion, so any humidity can cause them to tarnish. And, even slight tarnishing can cause a bit to bind up.

Also, loose bits may spin in the collet and mar the mating surfaces. Too, wood resins can gum up the collet and bit by literally baking onto their polished surfaces during the heat of routing.

To combat tarnish, use a gentle polish like those made for shining silverware. Even an abrasive eraser, like those used for removing ink, may do the trick. For especially stubborn deposits, try a gentle abrasive such as a grey Scotch-Brite pad. If resins seem to be the problem, soak the affected surfaces in mineral spirits. You *don't* want to compound the problem by scoring the mating surfaces, so avoid using sandpaper, files, and the like.

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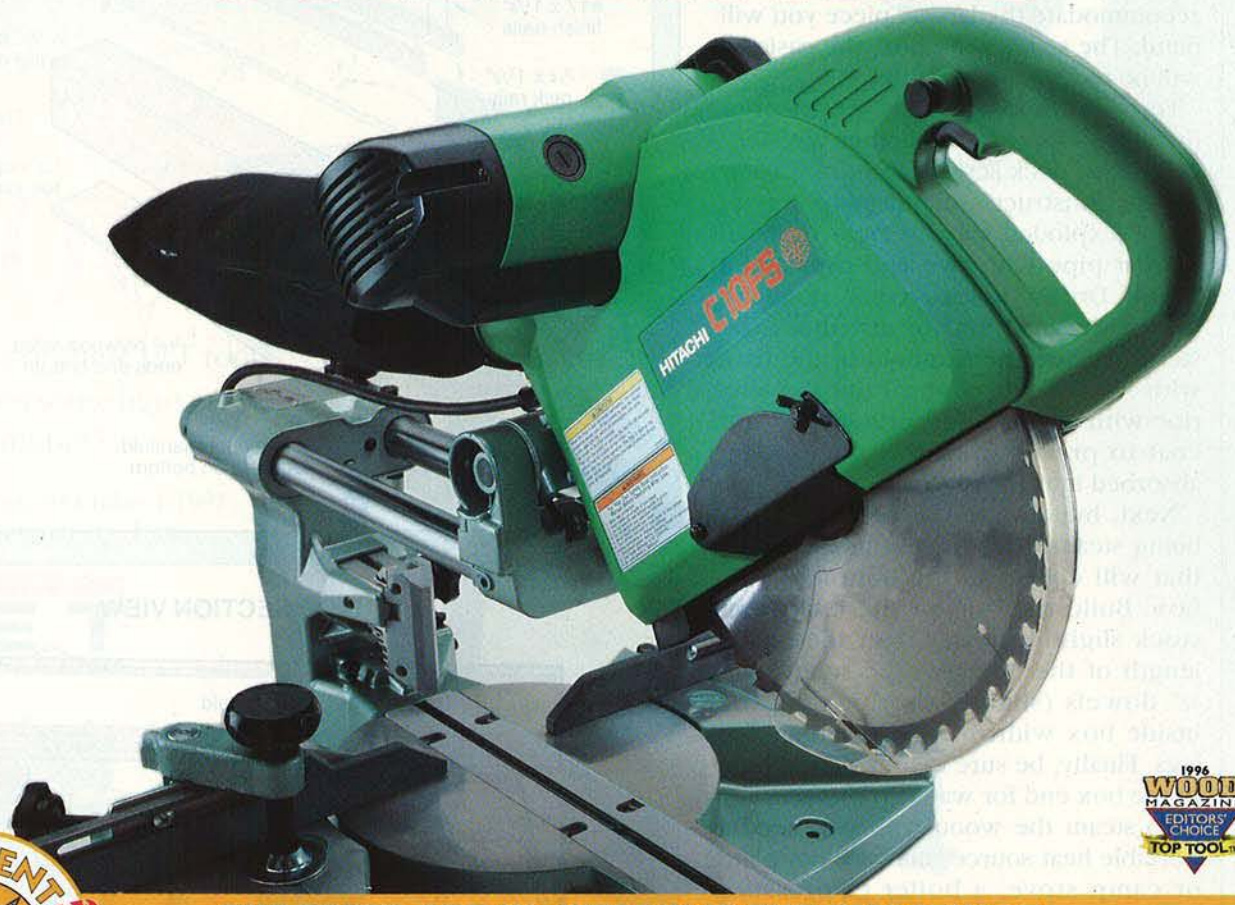
*Continued on page 24*

# THAT WHINE YOU HEAR IS JUST THE COMPETITION

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*Continued from page 22*

# Bending wood to your will

*I would like to build a steam box for bending rockers and other parts for chairs and toys. How big does it need to be, and how do I build it? How long do I need to steam the wood?*

***—Frederick Chapman, Lansing, Mich.***

Fred, most steam boxes range from 5' to 7' long, and have depths and widths from 5" to 8". However, your steam box only needs to be large enough to accommodate the largest piece you will bend. The smaller the box, the easier it will be to heat and to store.

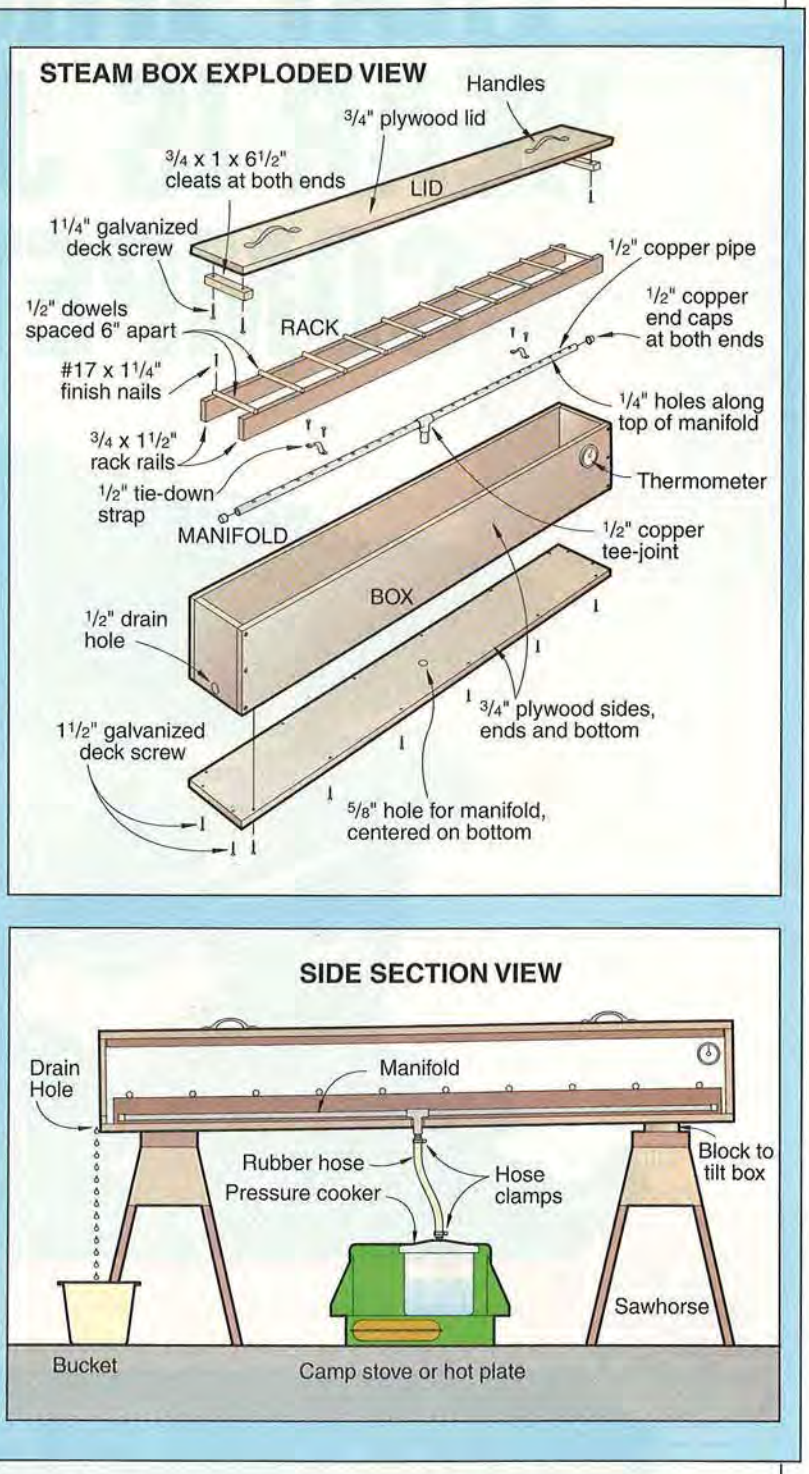
To build the box, use ¾" AC/exterior fir plywood screwed together with 1½" galvanized deck screws and simple butt joints. Construct a manifold as shown in the exploded view at *right* from ½" copper pipe with two end caps and a T-joint. Drill ¼" holes every 2" along the top of the manifold to distribute the steam. Secure the manifold to the base with ½" tie-down straps. Paint the interior with an oil-based primer and top coat to prevent moisture from being absorbed into the plywood.

Next, build a rack to keep the parts being steamed from lying in the water that will collect in the bottom of the box. Build the rails of the rack from stock slightly shorter than the inside length of the box. For the rungs, nail ½" dowels (slightly shorter than the inside box width) every 6" along the legs. Finally, be sure to add a drain hole in the box end for water to escape.

To steam the wood, you will need a portable heat source such as a hot plate or camp stove, a boiler (a pressure cooker works well), a hose to carry the steam, and a thermometer (placed in either end). Place the box across two sawhorses, with a block on one end to tilt the box as shown in the side section view. Once the box temperature reaches 212°F, leave the pieces in for 15 minutes for every ¼" of workpiece thickness. To prevent steam burns, wear long-sleeved shirts and gloves.

Finally, steamed wood will not retain the exact shape it has while clamped. Some spring back will always take place. Unfortunately, only by trial and error will you be able to determine the exact amount of spring back that will occur. Whether you use forms or other methods to bend the piece to shape, make the curves a bit more exaggerated than you want for the finished piece. This exaggeration should allow for the spring back that will inevitably occur when you unclamp the piece after it has dried.

*Continued on page 26*



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*Continued from page 24*

# A sideboard by any other name

***In a recent discussion, my friends and I were trying to differentiate between the words sideboard, buffet, credenza, hutch, and breakfront. The dictionary wasn't much help, as these terms seemed to be used interchangeably. Does a technical definition exist for each item?***

***—Edward Link, Waukegan, Ill.***

Ed, the word *sideboard* refers to a piece of dining-room furniture used for holding dishes. Its origin comes from the "sideboard" table used to hold dishes for serving guests at a central trestle table centuries ago. Later, during the reign of Queen Elizabeth I of England (1558-1603), drawers and cupboards were added to this table. Then, the table evolved into a large, double-bodied cabinet with open shelves for the display of dishes. In the late-18th and early-19th centuries, the sideboard designs of Thomas Chippendale and the Adam brothers returned the sideboard to the lower, table-like structure of Elizabethan times.

The words buffet, credenza, and hutch all refer to variations of the sideboard. Typically, the word buffet describes a sideboard or small cupboard for use in a dining room. (Our Mission-style buffet shown *second from top,* and published in the February 1995 issue fits this description nicely.)

The word hutch originates from the French word *huche*, and referred originally to a chest with doors mounted on legs. Jacobean-style hutches came to America with the early settlers, and here they evolved into a cabinet having a lower chest and an upper shelf unit. Consequently, most of the pieces we now see referred to as hutches are primarily colonial American-style pieces with a chest with doors forming the bottom section and open shelves at the top.

The word credenza also has an interesting history. It appears to have originated from the Latin word *credere*, which translates as *to believe*. Its original reference was to the small table/cupboards called credence, which were placed at either side of the altar and used to hold communion ware. Over time, this design was transferred into secular use, and these cabinets found use as sideboards. Eventually, the term evolved from credence to credenza.

A breakfront can be more specifically defined as a cabinet or bookcase in which the center section extends forward of the end sections. This is the one cabinet out of this group that does not have its origin in food serving. Rather, the design probably evolved from architectural designs that featured the center of a building facade projecting out from the wings.

Historical examples of sideboards and cabinets

*Continued on page 28*

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POWER TOOLS FOR THE *LONG RUN*

*Continued from page 26*

## Preventing wood lamination cracks

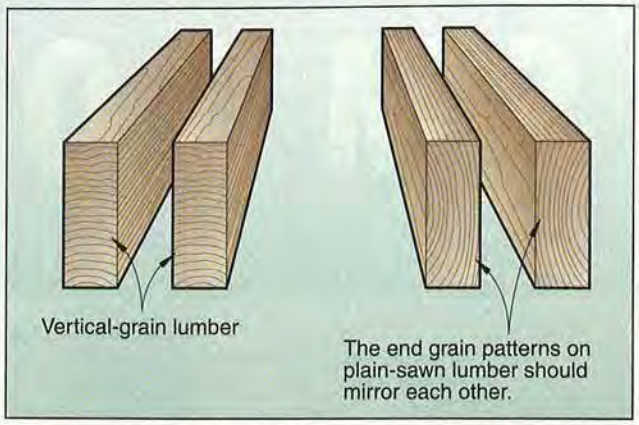
*I build model fishing boats, and laminate short lengths of 2×4 spruce to make the hull. After gluing the two hull-block halves together, I leave them in the clamps overnight. Then, I use wood filler to fill any openings in the block, after which I shape, sand, and paint the hull.*

*My problem occurs later, as the wood filler shrinks and causes cracks to form on the boat hull. Sometimes the laminations have separated, and then I really have a difficult time fixing the hull. What can I do to reduce the problems I'm having with these boat models?*

***—Raymond Russell, Saint Simons Island, Ga.***

We have a few suggestions that should help, Ray. First cut your spruce 2×4s to the approximate lengths you will need to make the boat hulls. Stack and sticker these sections, and let them sit for a couple of weeks. This will allow the wood to dry a bit more (most construction-grade lumber is kiln-dried to a 15 to 19 percent moisture content) and acclimate to your shop.

Next, joint the mating surfaces of the 2×4 sections before gluing them together. You will experience fewer problems with the pieces separating later if the board faces meet completely without the need for heavy clamping. And, well-jointed faces should not require any filling where the two pieces come together.




Before you glue the pieces together, take a look at the end grain of each board. If possible, arrange the wood so the end grains of the two pieces mirror each other *(see drawing above)*. This will allow an equal movement of the wood along the joint. And, for the most stable wood, we suggest you use quartersawn or vertical-grain lumber.

*Continued on page 30*

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ASK WOOD

*Continued from page 28*

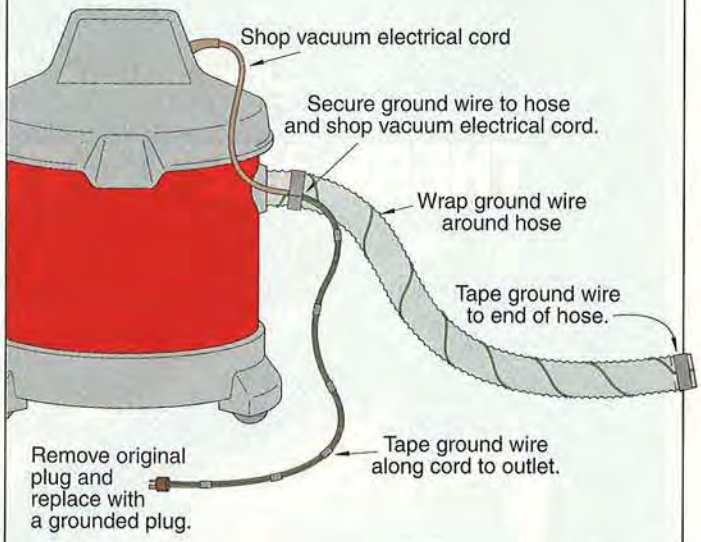
## Shop vacuum static solution

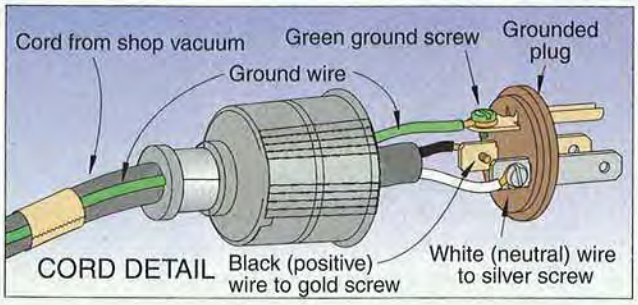
*After reading your review of dust collectors in the April 1997 issue, I wondered about the potential problems of static electricity buildup around fine woodworking dust. My new shop vacuum, which I use as a portable dust collector, builds up a lot of static. Do I need to take precautions against dust explosions or static-induced fire?*

***—Mark Striker, Jersey Shore, Pa.***

Mark, the best reason to deal with static has more to do with comfort than with safety. After all, nobody likes to get shocked. And, little likelihood exists of a static-induced dust explosion occurring in a home shop. For example, the universal motors in portable electric tools create more highly charged sparks than a shop vacuum, but we don't know of any such sparks causing an explosion.

To avoid static shocks, create a ground for your shop vacuum. Few vacs have grounded plugs, so you will need to improvise your own. First, wrap insulated or bare copper wire around the hose. Run the wire along the electrical cord. Replace the two-prong plug with a three-prong plug, and tighten the ground wire to the ground contact of the new plug. It may not be pretty, but it will work with a correctly grounded outlet.


Shop vacuum electrical cord
Secure ground wire to hose and shop vacuum electrical cord.
Wrap ground wire around hose
Tape ground wire to end of hose.
Remove original plug and replace with a grounded plug.
Tape ground wire along cord to outlet.



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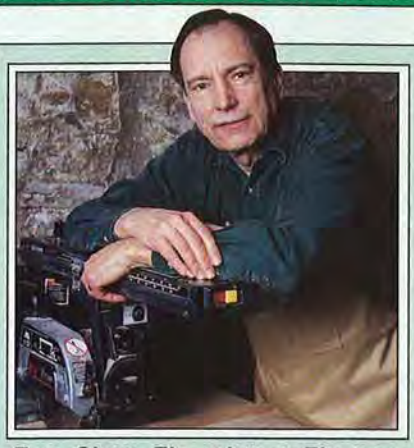

Top Shop Tip winner Thomas Morgan takes a breather in his basement shop.

Like many readers, Thomas Morgan has a basement shop. And because he and his wife operate a bed and breakfast in the upper levels of their home, it's especially important to keep noise and dust to a minimum. Tom solved the dust problem by installing an air cleaner, but created more noise in the process. He persisted, though, and his quiet solution, detailed at *right*, wins him the Top Shop Tip prize for this issue.

Your solution to a particular woodworking problem may be worth $40. If we select your idea as the Top Shop Tip, you'll win a tool prize valued at $250 or more, and we'll include your photo in this column. To submit a tip, send a letter, including your daytime phone number, with a photo or drawing of your idea, to:

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Bill Krier
ASSISTANT MANAGING EDITOR

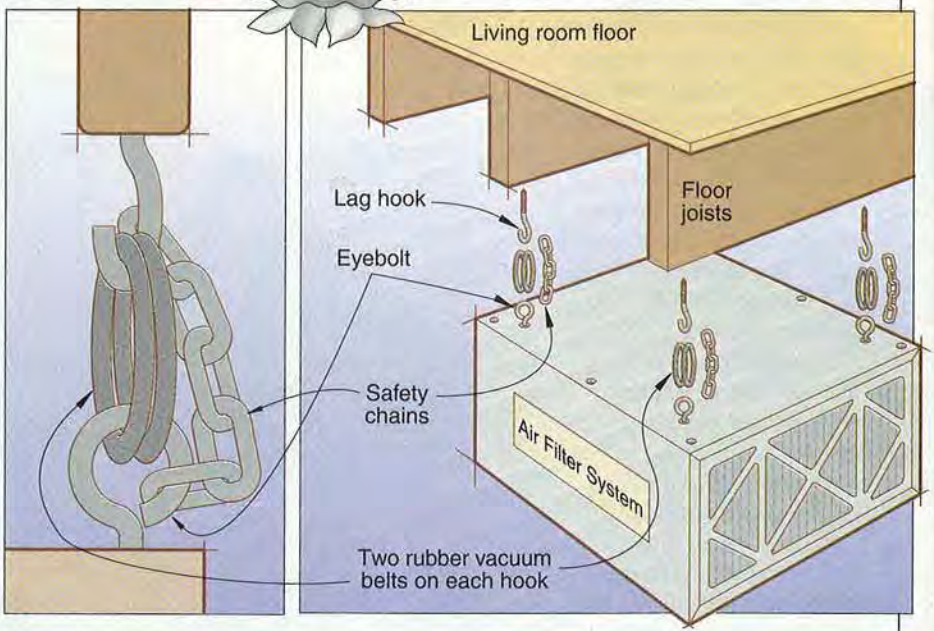
## Rubber belts keep air cleaner from shaking

I wanted to control dust in my basement workshop, so I installed a JDS Air-Tech air cleaner. I hung it from the floor joists using lag hooks and eyebolts as recommended by the manufacturer. But when I switched it on, the noise and vibration were very noticeable in the living room located directly above the shop.

To solve the problem, I suspended the air cleaner on the hooks with rubber vacuum cleaner belts. The belts support the machine, and yet dampen the noise and vibration. I added short lengths of chain as a safety measure in case the belts deteriorate over time.

*—Thomas Morgan, Cannon Falls, Minn.*

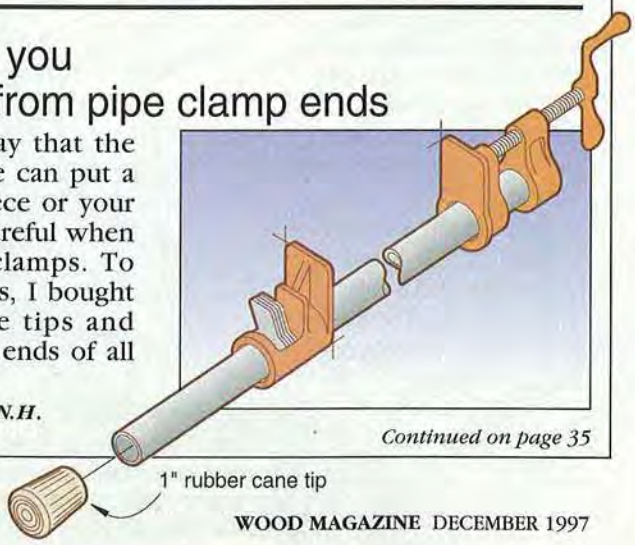
For submitting the Top Shop Tip, Thomas Morgan receives a DeWalt DW621 2-hp plunge router. Congratulations, Thomas!




## Cane tip saves you and your work from pipe clamp ends

I learned the hard way that the open end of a ¾" pipe can put a real ding in a workpiece or your noggin if you're not careful when handling your pipe clamps. To prevent future mishaps, I bought some 1" rubber cane tips and installed them on the ends of all my clamps.

*—Don Swanson, Plaistow, N.H.*




*Continued on page 35*

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Call or e-mail CMT USA now and request your **free full-color catalogue!**

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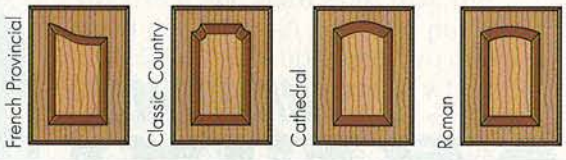


## But what is it that sets us apart from all the rest?

It could be that we use only the best materials available, such as solid bar stock steel from Van Moss Stahl in Switzerland for the shanks and bodies of our bits to give each bit extra strength and support. Look for the points at the top and bottom of the shank of a CMT bit - we concentrically balance grind all of our bits to guarantee perfect, no wobble performance. The carbide tips and solid carbide bits are manufactured from an exclusive micrograin carbide from Céramétal in Luxembourg to guarantee exceptionally clean, accurate cuts and extended wear.

**But probably the easiest way to recognize a genuine CMT bit is by its orange color. Only CMT applies an exclusive orange non-stick PTFE coating at 750°F to protect and prolong the life of your bits and it's just another way to let you know that you are getting a CMT bit.**

**Just to be sure, we've trademarked it.**

So now you know, if you want only the highest quality router bits, boring bits and saw blades in your workshop, you want CMT. Look for the orange ones, made in Italy.

**Available only from authorized dealers of CMT Utensili and CMT USA.**

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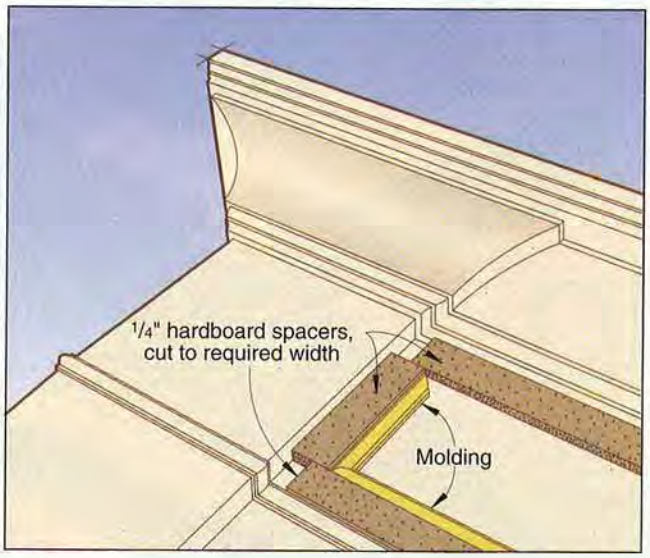
TIPS FROM YOUR SHOP (AND OURS)

*Continued from page 32*

## Spacers keep decorative moldings in proper alignment

I needed to install decorative trim molding in a rectangular shape on the face of the fireplace surround on *page 61*. Because the face was recessed on all four sides, I ripped spacer strips of ¼" hardboard to give me the proper spacing between the edge of the board's face and the trim, as shown *below*.

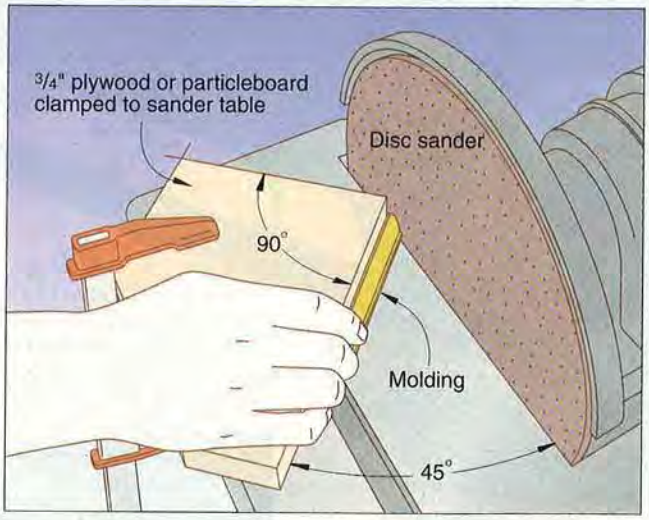
***—Chuck Hedlund, Project Builder, WOOD magazine***




## Using disc sander puts finishing touch on trim molding miters

No matter how carefully you cut them, mitered trim moldings never seem to fit perfectly. To fit the trim, I miter the ends of the trim slightly longer than finished size, then clamp a board with a right angle corner to my disc sander as shown *below*. Then, I lightly sand the miters to get a perfect fit.

***—Chuck Hedlund, Project Builder, WOOD magazine***




*Continued on page 38*


# Dust-Free Sanding

## Eliminate hazardous dust *Before* it becomes airborne

Airborne dust is now being recognized as a major health hazard. Imagine sanding in a dust-free environment, where 98% of the dust created by sanding is gone.

**How It Works**

Dust produced by sanding is immediately sucked away through holes located in the sandpaper, the bottom of the sander's pad, AND around the outside edge of the pad (a FEIN exclusive). The extracted dust is contained by a powerful vacuum.

**Unbeatable Finishes**

Typically when you sand with normal sanders, your sander ends up riding on a bed of dust and broken abrasive. With the FEIN Sanding System, this "bed" of dust doesn't exist. Your paper cuts faster, cleaner, and lasts up to 10 times longer. You simply can't get the same finish by any other sanding method.

**Automatic Vacuum**

When you turn your Fein sander on, the vacuum starts. When you switch your sander off, the vacuum stops. . . automatically. The Fein Turbo II Vacuum is built to handle large amounts of superfine dust.

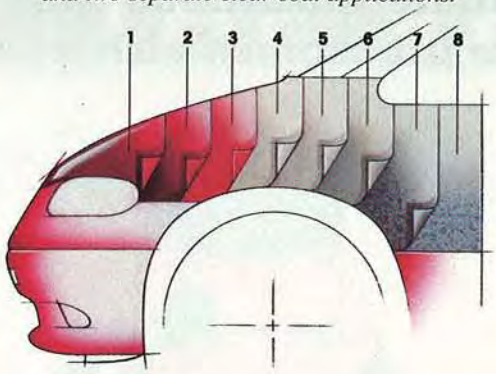
**It's easy to get more information, simply call and ask for a free color brochure: (800)441-9878**

**FEIN Power Tools Inc.**

**3019 West Carson St., Pittsburgh, PA 15204**
**(412)331-2325 fax: (412)331-3599**

Circle No. 37

To keep Caravan looking good at any angle, we use a highly protective, eight-step finishing process that includes a full-body powdered anti-chip primer coat and two separate clear coat applications.



Available anti-lock brakes and traction control give you extra control when braking and steering on slick surfaces.

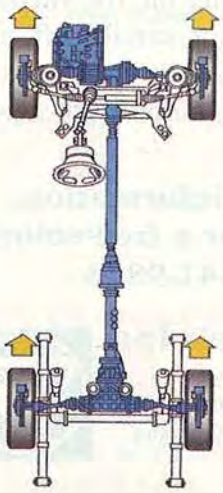
A remarkably tight turning circle makes parking easy.

With 12 convenient storage bins, grabbing a tissue is not an issue.

# Features you're sure to appreciate...

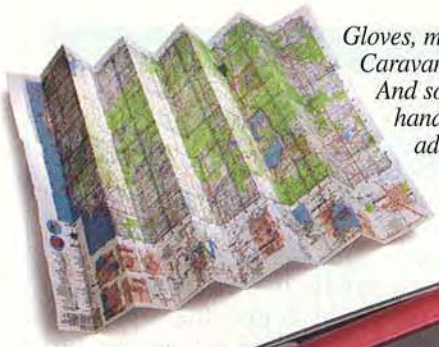
Caravan's available remote keyless entry works up to 23 feet away. And it includes a personal alarm system that can also be activated by remote control.

Caravan's available all-wheel-drive system features an inter-axle viscous coupling that automatically gives more torque to the rear wheels as needed.



When we redesigned Caravan we rounded the corners for a more aerodynamic shape, and still found a way to get 32 more cubic feet of room over the previous model.

The benefits are clear when you opt for heating elements under the front and rear wipers that help melt away ice and snow.



Gloves, maps and such can go in Caravan's tilt-out glove box. And some models have handy door pockets for additional storage.

To keep things nice and quiet, we offer carpeting that's backed by three layers of sound insulation.

Caravan not only offers a convenient driver's side sliding door, it's cleverly designed to hold both sliding doors open ... even when you're parked on the steepest of hills.

# ...if you're so inclined.

Dodge Caravan is backed by our Customer One Care™ 3-year or 36,000-mile bumper-to-bumper warranty and 3/36 Roadside Assistance.*

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*See limited warranty & restrictions at your dealer. Excludes normal maintenance & wear items.

Always use seat belts. Remember a backseat is the safest place for children.

Caravan The New Dodge

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Circle No. 512



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Big cast-iron table with steel extensions lets you make cuts 25" right of the blade.

Improved T-Square® fence system and T-slot miter gage groove add up to more accuracy and precision than you'd expect from a saw in this price range.

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WOODWORKING MACHINERY
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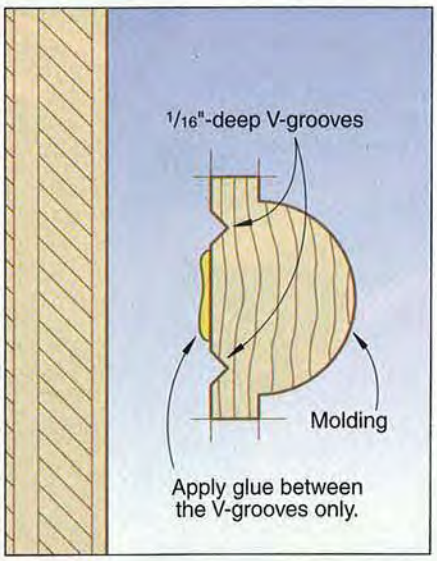
## TIPS FROM YOUR SHOP (AND OURS)

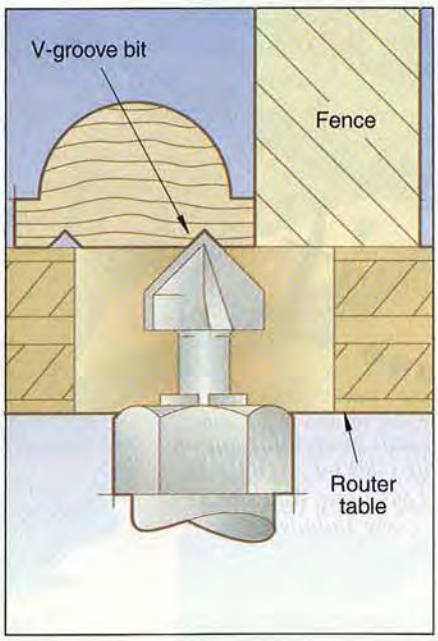
*Continued from page 35*

# V-grooves keep squeeze-out in check

When I glue trim molding in place, I don't want any glue squeeze-out, because it's impossible to clean it out of molding crevices. To keep glue squeeze-out in check, I use a V-groove bit in my table-mounted router to cut shallow grooves in the back side of the molding, as shown *below*. Then, I apply a thin bead of glue between the grooves. When I install the molding, any excess glue collects in the grooves.

***—Chuck Hedlund, Project Builder, WOOD magazine***



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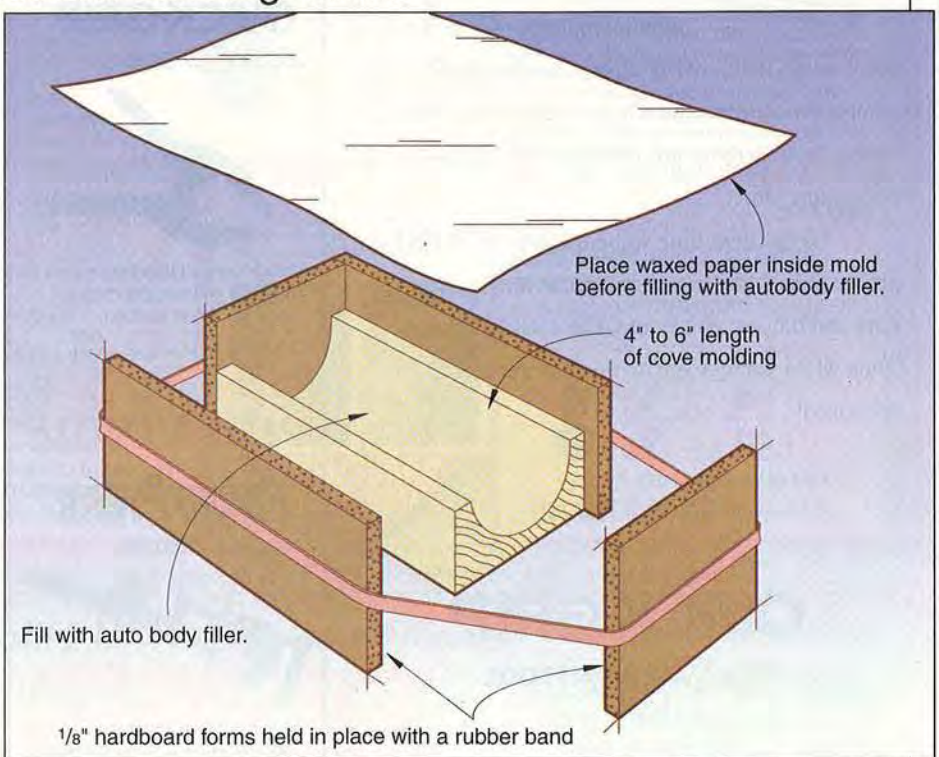
## Mold auto body filler for custom sanding blocks

When working on the fireplace surrounds featured on *page 61,* I needed to sand a large cove molding to remove saw blade marks. To make a custom-fit sanding block, I place waxed paper over a short length (4-6") of molding scrap. Then, I put pieces of waxed paper covered ⅛" hardboard around it to act as mold forms. A rubber band holds the hardboard in place.

Next, I fill the mold with two-part autobody filler, making sure the waxed paper lies flat along the molding. When the filler sets up, I pop the sides off the mold and trim any rough edges with a utility knife before the filler hardens completely. Wrapped in sandpaper, my new custom-fit sanding block makes quick work of smoothing out the cove. I've used this technique with all types of trim molding.

***—Chuck Hedlund, Project Builder, WOOD magazine***


Place waxed paper inside mold before filling with autobody filler.
4" to 6" length of cove molding
Fill with auto body filler.
⅛" hardboard forms held in place with a rubber band

*Continued on page 40*

# How To Leave A Subtle Hint.

To get a great gift you have to give a subtle hint. Nothing too conspicuous, mind you. Just a small reminder strategically placed on the refrigerator. Or the car dashboard. Or the bathroom sink. A little something to remind the ones you love about the gift you'd love to get.

After all, how are they supposed to know you want QUICK-GRIP® clamps if you don't tell them? That's exactly why we've included these handy clip-and-post coupons for your convenience. It's the only way to make 100-percent certain you'll get QUICK-GRIP clamps.

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GREAT GIFT IDEA

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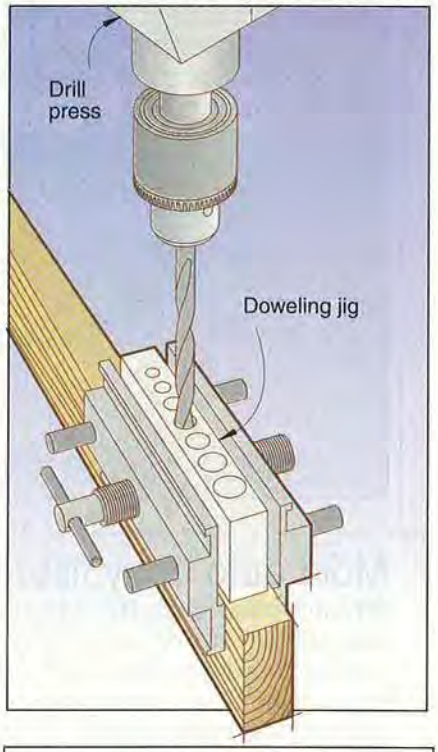
TIPS FROM YOUR SHOP (AND OURS)

*Continued from page 39*

## Doweling jig helps you center mortises

When I built a project with several mortise and tenon joints, I found a quick way to drill out the mortises and keep the bit perfectly centered on the stock. I use my self-centering doweling jig to keep the drill bit lined up properly. I drill the hole at each end of the mortise first, then drill out the stock between the holes.

***— Brian Grams, Gillette, Wyo.***




## A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Want a showroom quality finish on your next project? Try breaking your staining process into several steps using reduced color strengths. You'll find this and other tips used by the furniture industry on *page 38*.
- To prevent the pegs from working loose under load, see how we securely mounted the Shaker pegs on our quilt hanger (*page 86*).
- Want to give your carvings some color without covering up the wood grain? Read how we finished the figures for the Nativity set on *page 85*.

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| 30T | $125 | $ 99 | $ 89 | $ 79 |
| *8-1/4"X40TX 3/32" | $136 | $ 99 | $ 89 | $ 79 |
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*Fine Woodworking Magazine test Oct. 96 page 43*

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| Delta 9"x80Tx5/8" | $204 | $119 |
| **Ryobi–Makita & all 10"x80Tx5/8"** | $207 | $129 |
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| 9" x 80T x 1/8" & 3/32" K | $207 | $179 | 14" x 80T x 1" | $266 | $226 |
| 10" x 80T x 1/8" & 3/32" K | $207 | $159 | 16" x 100T x 1" | $262 | $243 |
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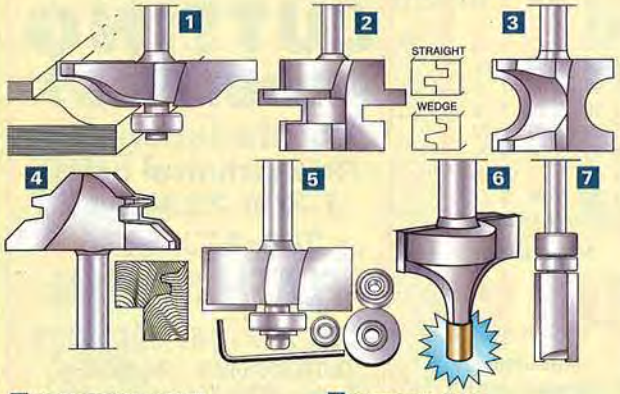


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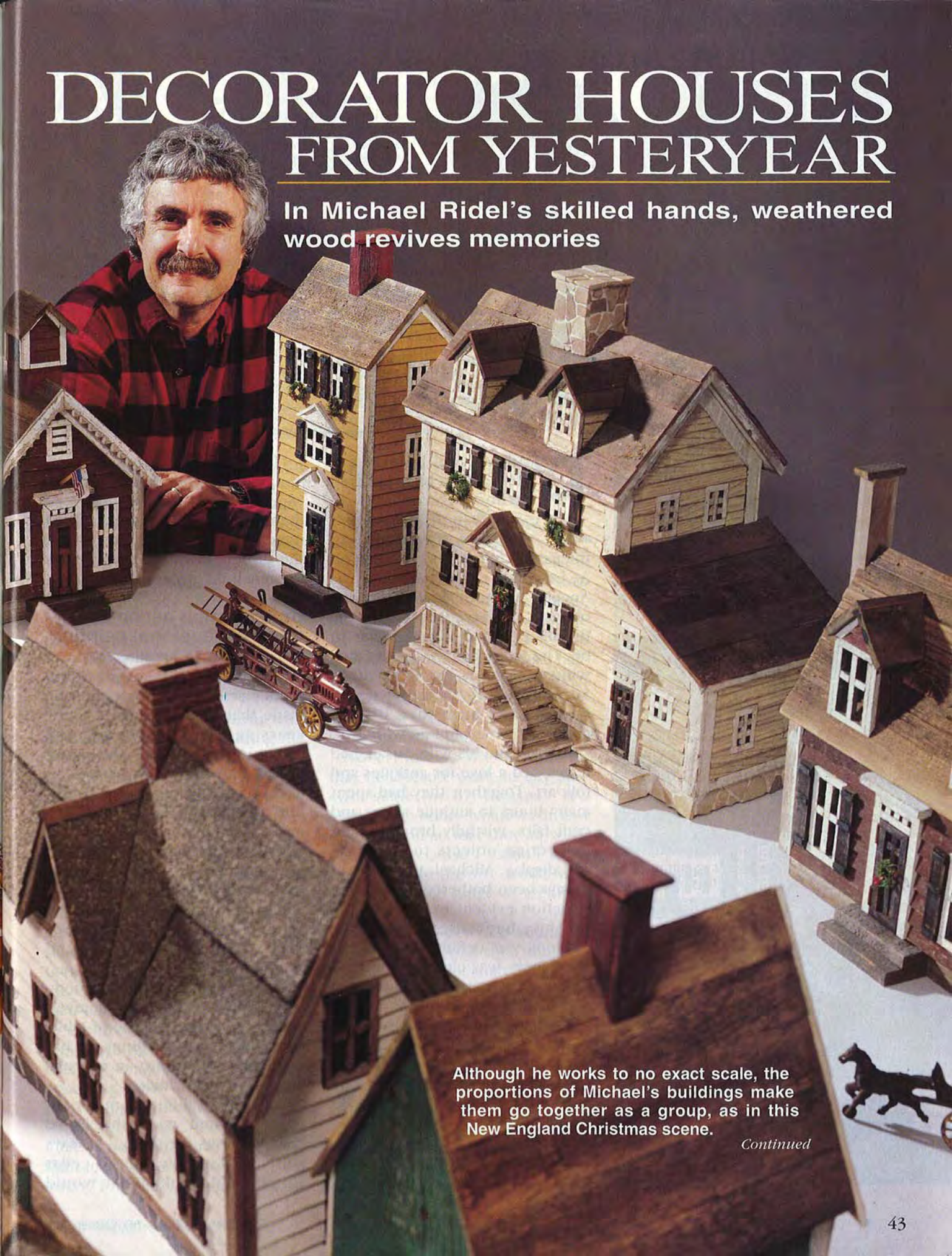
# DECORATOR HOUSES FROM YESTERYEAR

**In Michael Ridel's skilled hands, weathered wood revives memories**



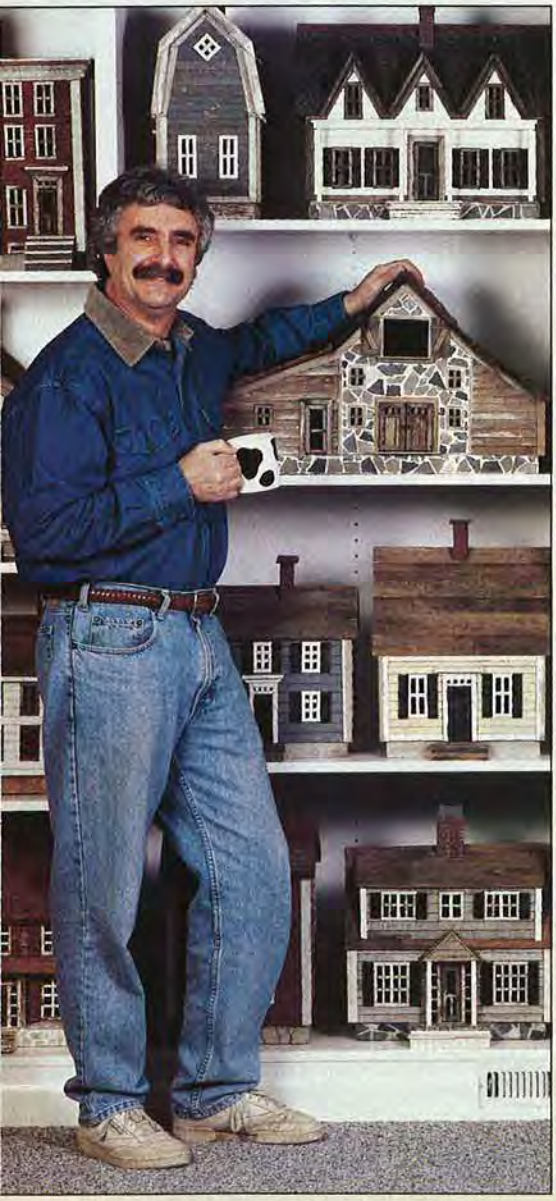
Although he works to no exact scale, the proportions of Michael's buildings make them go together as a group, as in this New England Christmas scene.

*Continued*

# DECORATOR HOUSES

The custom townhouse on the left was patterned after one in Alexandria, Virginia. It costs $1,800. The New England townhouse is a standard item, with a $595 price tag. Each house is 14" tall.

The stone facing on the one-of-a-kind farmhouse came from scraps at a building site. It may sell for as much as $1,500. The Victorian cottage with its gingerbread trim retails for $395.



For Michael Ridel, 51, a few boxes of weathered wood offered as firewood in 1990 led to a passion for building things that memories are made of. As he recalls, "A neighbor in Los Angeles had torn down a rickety, old gate and gave it to me for the fireplace. But that was never to be. The wood had this great faded whitewash on it—probably 40 to 50 years old. I looked at it and said, 'I can't burn that; it's too great. But what can I do with it?' "

Michael and his wife, Susan, had developed a love for antiques and folk art. Together, they had spent many hours in antique shops and craft fairs, wistfully browsing and inspecting objects to purchase and display. Michael, though, had always been bothered by the construction evident in many of the primitive birdhouses he saw. The old look was definitely there, but the joinery was clearly done with modern fasteners. The "marriage" of old and new commanded a high price alright, yet the aura didn't justify a purchase.

Michael's sudden windfall of aged wood inspired him, and he set out to build "a good old house," as he visioned it. With little more than a handsaw, a drill, some nails, and a bottle of wood glue, he built a rustic birdhouse.

"It looked like it had been around for awhile," says Michael. "So, I started making more of them—houses and buildings that I remembered from my travels. And the more I made, the more they became little pieces of art."

## Construction becomes a three-dimensional painting

Michael was an art director for a top Los Anegles advertising agency seven years ago when he made that first birdhouse. A few years ago, though, he put the client pressure and the smog behind him and took a position as executive art director for Lands' End, a large, Wisconsin-based, mail-order clothing company.

Today, Michael, Susan, and their two sons feel very much at home in their colonial-style home in suburban Madison. Surrounded by acres of trees, they watch birds flock to the outdoor feeders and Michael's folk-art birdhouses. Sitting in his beamed living room, Michael sips coffee as he unravels the story behind the line of tabletop homes and buildings he has gradually turned into an engrossing, part-time business.

"As I'd find different materials, types of found wood, that is, I'd discover uses for them," he says softly. "Like a weathered cedar shingle. I'd think, 'That would

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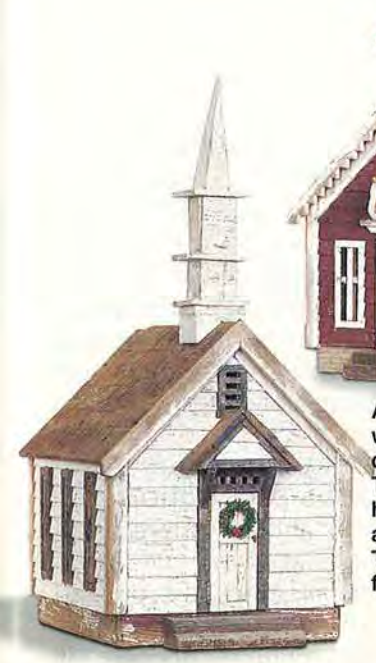


A one-room church was typical in 19th-century New England. The little red schoolhouse was found across rural America. Their prices range from $445 to $595.

The grey outbuilding represents one seen at a Shaker village, and costs $495. New Englanders immediately recognize the weathered saltbox style home, $545.

make a great rustic roof...on what? A barn!' That's how the different buildings evolved—by making use of the unique materials I'd come across in building what they were suited for. The material drove the evolution."

A naturally gifted artist, Michael had sketched and painted in water colors since he was a youngster. The theme was always architectural. With wood, he added the third dimension.

"When I started making the buildings, I was really putting my art into my craft. That is, I began using my knowledge of painting and shading and form and texture to help create buildings," Michael explains.

Unlike the artist who takes his paints, palette, and paper on location, though, Michael refers to memory, plus books and magazines for his buildings. "When I start to design a piece, such as a Cape Cod house, I try to capture the essence of a Cape Cod, rather than realistically rendering it. I try to capture the spirit of the building," says the soft-spoken craftsman. "If someone says to me, 'My goodness, those chimneys are not placed appropriately for a classic Cape Cod,' I'd say, "Maybe so, but I like to position them so they feel right to me—the balance, the symmetry. I'm close enough in detail and proportion that people know what they are."

## From wood to window, it's not strictly scale

From Pennsylvania barn to New England church, rural schoolhouse, and 18th-century colonial, Michael's buildings go with one another. In fact, a customer in Beverly Hills, California, has a half-dozen or so of his buildings lined up atop her kitchen cabinets, which were custom-built to accommodate them.

Nevertheless, Michael admits that he doesn't work to any specific scale for his houses. "It's kind of my scale, whatever it is. I just do them so that they all work together, because I exhibit them together. And the size works well across a whole range of architectural styles."

On close inspection, Michael's buildings do reveal their mingled dimensions—roof material sometimes way too thick, window muntins overly wide. But they lack nothing by doing so. A cedar shingle silvery in age and retaining all its natural thickness does remarkably well ripped into the boards for a barn roof.

"My scale is a visual thing," Michael says. "From the pencil drawings I make for each piece, I transfer the dimensions to the

*Continued*

At the bandsaw, Michael cuts a trim piece for a window. For ripping and resawing, he uses a benchtop tablesaw. For gingerbread, he has a scrollsaw.

By resawing the found wood so as to almost always leave a painted edge, then carefully assembling, Michael doesn't have to match the weathered finish on his buildings with paint.

Tiny brass hinges, aged in a solution of muriatic acid and water, contribute to a building's appeal.

**An outhouse was often referred to as "The Necessary." Michael's stands 8" tall and sells for $175. At $795, the Pennsylvania bank barn boasts a stone foundation. A steep roof, twin dormers, and gable chimneys mark the house on the right as a Cape Cod. A charmer, it has a retail price of $445.**

wood, then build up. But even then I have to make adjustments. Because I'm working from a two-dimensional plan, some things may not look right in three."

Michael works wood, yet he's not meticulous in constructing his buildings—on purpose. "Some boards aren't exactly straight, or there are some gaps between boards. I feel, though, that this occasional roughness adds a certain appeal that I would lose if I started to refine my building technique. There has to be a compromise to retain the charm."

## What he finds is what you get

Potential buyers marvel at Michael's apparent mastery of paint—his ability to simulate decades of exposure on siding, roofs, porches, doors, and window sills. However, Michael isn't out to fool anyone. Everything from painted wood to harshly weathered barn boards is mostly as it was found.

"When we lived in LA, Susan would take our youngest son and put him down for a nap in the car seat, then drive the residential alleys where we lived with an eye out for materials. One time she spotted a down-trodden picket fence and offered to have me remove it," Michael recalls. "Resawn, a single picket will produce siding for half a house! Why, I'd offer 25 cents for every picket my older son and his friends would bring home.

"In LA, however, it was a scavenger hunt," he continues. "When we moved to Wisconsin, we thought we were in barn-board heaven, although some people have begun to think that their weathered barn wood is gold. My standard price—if I have to buy wood—is a buck a board."

As a result of his old-wood collecting, the three-car garage at the Ridel home is one-third full of weathered stock. There's sun-softened, green-painted boards, piles of washed-out white ones, wind-whipped tan stock, natural grays, and other hues, sorted by color. Unless absolutely necessary, the wood won't be painted, retouched, sealed, or otherwise finished after it's ripped and glued into place.

Even major defects in the wood find a place in Michael's new construction. "A woman called me to say that she had just noticed that the church she purchased had a hole in the roof," he says, amused. "I said, 'It's supposed to.' I thought that hole was a benefit; it made the piece special. Real roofs do get holes"

The only new materials Michael buys are the tiny brass hinges for the doors and the screw eyes that serve as latches. To make them look as old as the other material, he soaks them in a solution of muriatic acid and water. "Some of the hinges I'm getting now are copper-plated brass, so I end up with this great green patina," he adds. "But there is a danger—leaving them in too long enlarges the screw holes."

## Marketing memories restricts his production

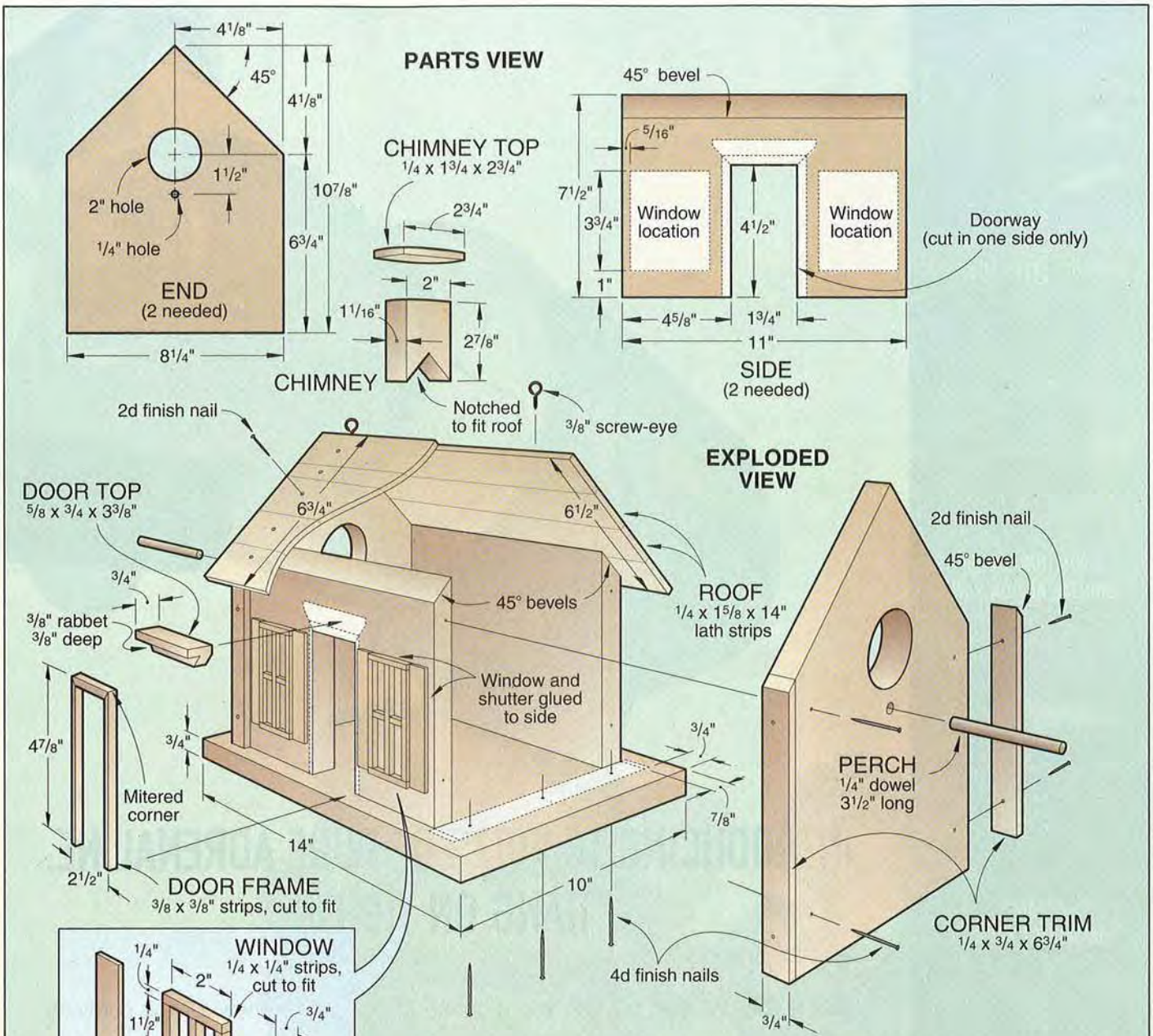
Michael sells about 90 percent of his buildings at wholesale. They go to museum shops, folk-art galleries, antique dealers, and upscale gift retailers. Because of this, he has to know exactly how long it takes to do each building.

"I'm not only working against what ends up looking right and feeling good to me, but what amount of time it's going to take to build," says Michael. "If I'm adding a building to my line, I have to be sure it can be marked up 100 percent and still make me some money. It's restricting because I really like certain pieces of trim, but they simply take too long. That's another reason to avoid painting, and let the original finish speak for itself.

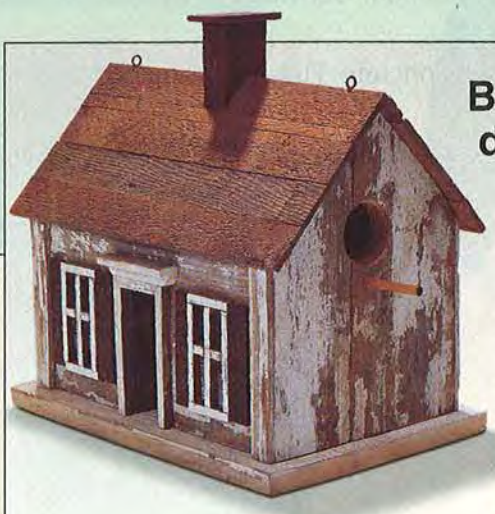
"On the other hand, I have my one-of-a-kind pieces," he points out. "They're collectors' buildings. I do one, usually on special order, and never repeat it." (See the folk art birdhouse *opposite*.)

Although he wholesales most of his work, Michael enjoys selling person-to-person at arts and crafts fairs. "There's an emotional response that I see and feel there," he notes. "People say, 'Oh, this house takes me back. I can hear the screen door closing.'

"The houses I make evoke all those memories that a home is so much a part of—family, togetherness, well-being, good times. The weathered wood and paint make all the buildings much more real, just as they probably look in people's memories. There's something magical about that."




Design by Michael Ridel © 1997



# Build your own decorator birdhouse

Michael Ridel designed this shed-style, decorative birdhouse specially for *WOOD*® magazine readers. Its butt-jointed, box construction makes building easy, and scrap wood will work just fine. Michael recycled old laths for the roof, and used weathered fence boards for the walls and base.

Written by Peter J. Stephano Photographs: John F. Schultz; John Hetherington Drawing: Kim Downing

**Memories by mail**

For an illustrated brochure/price list of Michael's buildings, send a self-addressed, stamped, business-sized envelope to The Wood Shed, P.O. Box 45387, Madison, WI 53744

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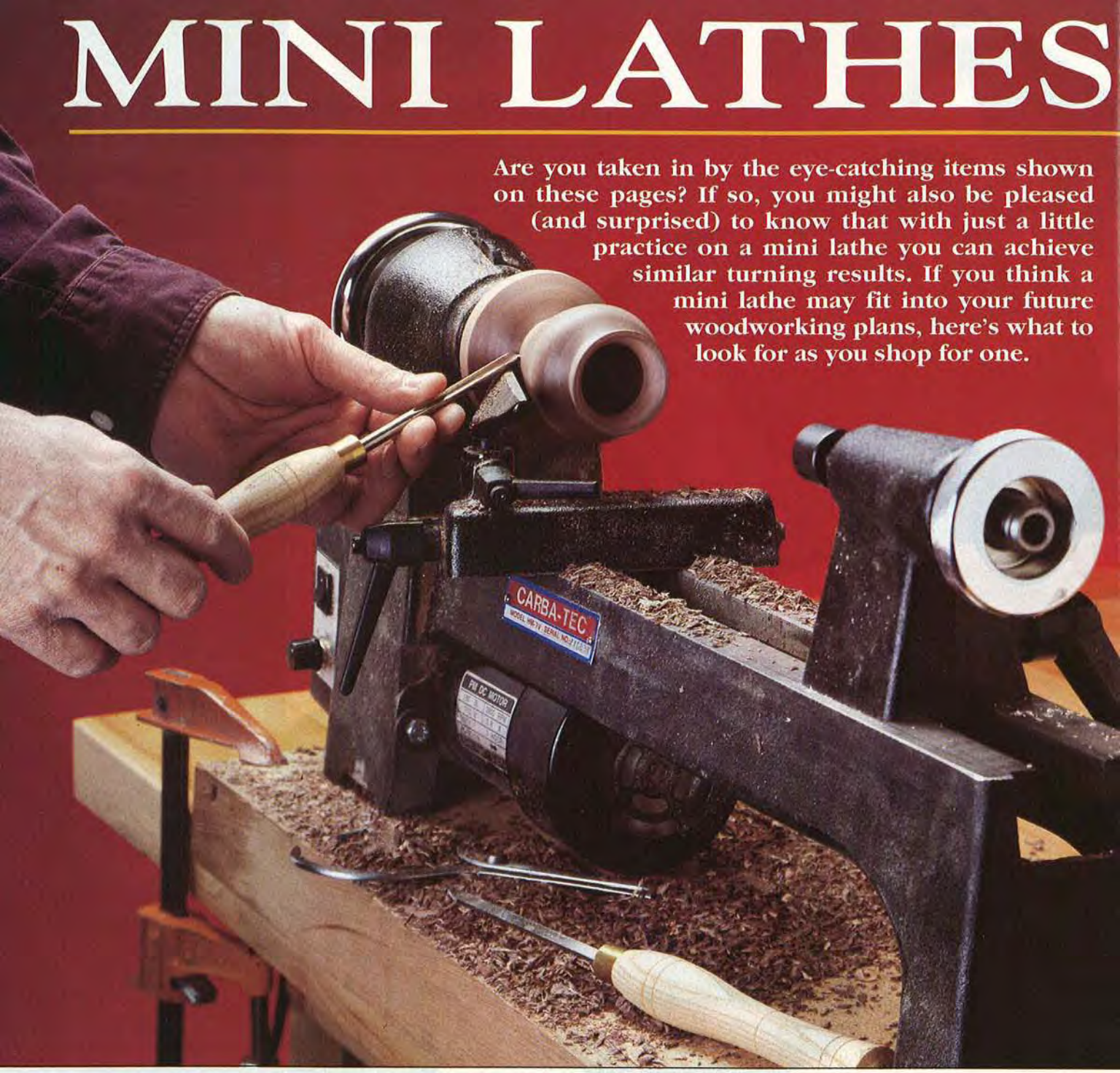
# MINI LATHES

**Are you taken in by the eye-catching items shown on these pages? If so, you might also be pleased (and surprised) to know that with just a little practice on a mini lathe you can achieve similar turning results. If you think a mini lathe may fit into your future woodworking plans, here's what to look for as you shop for one.**



## First, a few words about our testing procedure

Like every tool test, this review began with a thorough inspection of each machine, checking the quality of its components. Then, with each of the lathes we turned everything from pens (straight-bodied and contour-shaped) to goblets to spindles. Capacity and power were tested by turning ever-larger bowls from 1" to 6" in diameter. When the chips finally stopped flying, we had a pretty good idea of what mini lathes are all about, and which machines work best for turning specific types of projects.

## How mini lathes compare to full-sized lathes

As we began our investigation into mini lathes, one of the first questions we grappled with was: "Why should I buy a mini lathe when I can turn big *and* small

Print this article

# You get big results with these small machines

## Fast Facts

- Today's mini lathes come set up in one of two ways: for general-purpose turning or for making pen bodies.
- Even if you've never turned, you can enjoy quick success with a user-friendly mini lathe.
- Many so-called mini lathes are just downscaled versions of full-sized lathes. We tell you what qualities make for a true mini lathe.

objects on a full-sized lathe?" The answer became crystal-clear early in our trials of these machines.

Compared to full-sized lathes, mini lathes prove much "friendlier" because of their low vibration levels, lower-powered motors, and downscaled accessories specifically designed for small projects. For example, mini lathes have short toolrests (under 4" long) that you can position close to the project for sturdy support of your turning tools. And, most mini lathes accept collets that hold tiny turnings by tenons as small as ⅛" diameter. We found collets ideal for holding delicate spindles like the one shown on the *next page*.

Also, keep in mind that you can purchase a high-quality mini lathe for as little as $270. On the other hand, full-sized lathes of better quality cost at least $450, with top models going for $3,000-plus.

### The mini lathe market

For this article we ordered seven products, but after turning a few objects, we narrowed the test to four true mini lathes. (See the *next page* for information on the lathes that we knocked out.) The tested brands were Carba-Tec, Klein, Sherline, and Woodwrite.

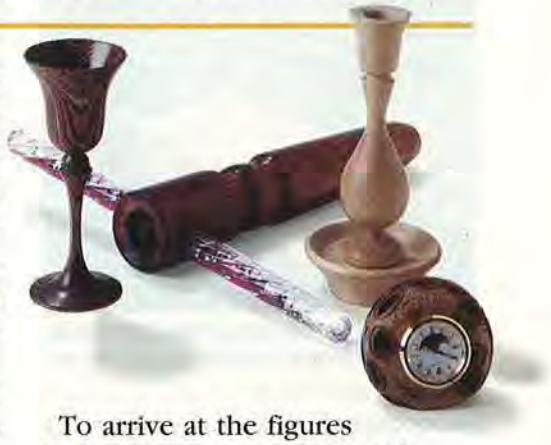
The Carba-Tec and Klein lathes are designed for general-purpose work including pens, vessels, and spindles. With these you make cuts using a handheld turning tool on a toolrest as shown at *left*. As with a full-sized lathe, you can freely position the toolrest and tools to create objects of most any shape.

On the other hand, the Sherline and Woodwrite products are basically miniature metalworking lathes especially adapted for turning pens. The Sherline was adapted by Hut Products for Wood, and the Woodwrite is a Taig metalworking lathe adapted to penmaking by Woodwrite.

Both of these lathes have a crank-operated carriage that moves a secured cutting tip in two directions: perpendicular and parallel to the length of the workpiece. By using the cranks, anyone, regardless of skill level, can turn perfectly cylindrical pen bodies. The Woodwrite has available toolrests for using handheld tools, but we found them too light for general woodworking use other than small pen contours. Hut Products for Wood has an optional line of sturdy toolrests for the Sherline lathe. With these accessories the Sherline can perform general woodturning tasks.

### Key points to consider when buying a mini lathe

- **Capacity.** If you intend to turn candleholders, kaleidoscopes, or other projects over 6½" long, take a look at the between-centers capacity column in the chart at the *end of this article*. In this area our tested lathes varied from 6½" with the Sherline to 12" with the Carba-Tec (measured with spur and live centers in place). You can buy a longer-bed version of the Sherline with 15½" between centers for an additional $100.



To arrive at the figures in the "swing over bed" column, we measured the distance from the center of the spindle to the bed, and multiplied this figure times 2. This tells you the maximum *diameter* of a workpiece that fits on the lathe. The tested lathes varied in swing over bed from 3⅜"(Sherline) to 6" (Carba-Tec). You can buy a 1¼" riser block for the Sherline that increases the swing by 2½" ($40 for the headstock riser, $55 for the tailstock riser, or $90 for the pair).

- **Drive system.** All of the lathes have ample power for turning pens and other between-centers projects. But, when we tested their limits by making ever-larger bowls, we found that most of the machines were not capable of turning objects as big as their maximum swing over bed allowed. For example, even though the Carba-Tec has 6" of swing over its bed, its DC motor just wasn't powerful enough to turn objects over 3" in diameter. The Klein and Woodwrite lathes were driven by plenty-powerful induction motors, but their belts slipped when we attempted to turn objects over 3" in diameter.

Only the Sherline's drive system proved powerful enough for us to take full advantage of its maximum swing over bed (5⅞" with riser block). But, for bowls over 3" in diameter, you need to purchase optional inboard or outboard toolrests costing $65 or $62.50 each.

*Continued*

You can make screw-on lids for vessels with the optional threading jig for the Klein lathe.

Collets like this one simplify the task of turning delicate spindles for dollhouses, mini furniture, and similar projects.

The Woodwrite lathe comes with a dust-collection manifold that captures nearly 100 percent of turning debris.

• **Accessories.** As you can see in the chart at the *end of this article*, these lathes have a bevy of accessories—some standard, but most optional. When examining your budget, keep in mind that a sizable collection of accessories can greatly increase your total investment.

One accessory unique to the Klein lathe is the threading jig shown *above left* for making small vessels with threaded lids. It costs about $160—not cheap—but it did produce great results.

The Woodwrite comes standard with a unique dust-collection manifold (see photo *above*). During some points we learned while using them. The Vicmarc was easily the best-made machine of this group, but it costs $430 without motor (from Craft Supplies, 800/551-8876). It even handles many full-sized lathe accessories because of its No. 2 Morse taper and 1"×8-tpi spindle.

The Record works just as smoothly as the Vicmarc and costs $400 with motor, but you have to use wrenches for all of its basic adjustments, even for toolrest and tailstock positioning. The Ryobi, selling for about $250, seems best suited to the occasional woodturner. For spindle work it does give you 36" of capacity between centers.

## Three almost-mini lathes

The lathes shown here—the Record RPML 300C, Ryobi ML618, and Vicmarc VL100—have been labeled "mini lathes" by various media and catalogs. So, we initially included them in our test. But, we soon discovered that putting them alongside the mini lathes reviewed in this article is like comparing apples to oranges. For example, the Vicmarc weighs 80 pounds (with motor we added), and the Record weighs 90 pounds (motor included). So, these machines aren't truly portable (the heaviest of the reviewed lathes, the Carba-Tec, weighs 36 pounds). The Ryobi, although weighing under 50 pounds, does not match the vibration-free smoothness of the mini lathes we reviewed.

These three lathes do accept mandrels for turning pens, but their other accessories, such as faceplates and toolrests, just aren't small enough for miniature projects. And, their more powerful drive systems did not give us the feeling of finesse and confidence that true mini lathes do.

Nevertheless, these machines do have a place in the market. If you want to turn medium-sized vessels (over 3" in diameter), these lathes will handle them (most of the mini lathes do not work well with bowls over 3" in diameter).

If you're leaning toward one of these almost-mini lathes, here are

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|---|---|---|---|---|---|---|
| CARBA- | F | E | P | E | E | P |
| KLEIN | F | E | P | E | E | E |
| SHERLINE | E | F* / E** | E | P* / E** | P* / E** | E |
| WOODWRITE | E | F | G | P | F | F |

NOTES

E Excellent
G Good
F Fair
P Poor

* With standard accessories
** With optional toolpost assembly

1. Between-centers turnings include such things as: Kaleidoscopes, candleholders, ornaments, perfume decanters, pepper mills, salt and pepper shakers, napkin rings, key rings, and handles for various items including corkscrews, turning tools, hand mirrors, magnifying glasses, and letter openers.
2. Faceplate turnings include small bowls and plates, stamp boxes, compact mirrors, potpourri boxes, music boxes, and coasters.
3. Collet-held workpieces include miniature goblets, drawer knobs, and spindles for models, miniature furniture, and dollhouses.

our tests, it captured nearly 100 percent of the dust.

You can purchase a great number of metalworking accessories for the Sherline and Woodwrite lathes by contacting the original manufacturers: Sherline Products, 760/744-3674; and Taig Tool Co., 602/895-6978.

### Pen-making: a woodworking hot spot

If you find woodworking catalogs in your mailbox (and who among us doesn't?), you may have noticed all of the space devoted lately to pen-making supplies. The reasons are pretty simple. With an investment of $3-$30 in pen or mechanical pencil hardware, you can quickly turn out pens that sell for $20-$130. Any scraps of wood as small as ⅝×⅝×3" will do, or you can order precut blanks of exotic woods and plastics.

Rus Hurt, a turning pro from Port Wing, Wisconsin, who regularly consults with us on turning matters, earns part of his living from making high-end pens for his Port Wing Pen Company. Here's what he has to say on the topic:

"My top pens sell for $130 each, so I use the best parts and materials available. I use only solid woods, because I've seen the laminated materials fracture six months after I sell the pen (ouch!). I primarily use three materials that don't require a finish, just buffing: stabilized (plastic impregnated) burls, acrylic acetate, and celluloid acetate.

"I struggle to find good pen hardware—most of what's out there is poor quality. Because they wear better, I prefer the gold/titanium-plated parts over those plated with pure gold."

***Note:*** *In our own testing, inexpensive pen components lost their gold plating after just a few weeks of use. And, some pocket clips snapped off easily. Like Rus, we suggest that you buy only high-quality components.*

*Also, we noticed that even solid woods tend to fracture when used to make the slim, Cross-style pens, probably because of their thin bodies. In the future, we'll stick to making the beefier Mont Blanc- and Parker-style pens that seem to hold up better.*

Rus uses the Carba-Tec and Klein lathes because he turns all of his pens freehand. "Both lathes are portable, so I take them everywhere including the local gallery, schools, and on family trips. Because I've used a large General lathe for years, I appreciate that the Carba-Tec functions more like a typical, full-sized lathe, with easy-to-operate adjustments. The Klein is a little more accurate."

***Note:*** *See Rus' tips for tuning a mini lathe on page 14.*

### Our recommendations

The mini lathes we tested are designed for specific types of users. To help you choose the right model, we rate the lathes for their appropriateness for specific tasks in the chart *above left*.

*Continued*

# MINI LATHES

For general-purpose turning at an affordable price, you can't go wrong with the Carba-Tec II. It comes complete with a self-contained motor and basic accessories for only $270. Invest $20 more in a mandrel, and you can turn pens freehand.

If you consider yourself a serious woodturner who requires great precision and versatility in a lathe, buy the Klein for $350. (You'll have to add a used motor or purchase a new one for about $110.)

The Sherline will suit your needs if you're primarily interested in turning pens, but also need the extra power its motor supplies for turning vessels up to 5⅞" in diameter. Your initial investment of $455 will increase to over $600 if you buy the long bed and heavy-duty toolrests necessary for general-purpose woodworking. The fit, finish, and overall construction quality of this machine was unmatched in our test.

If you only want to turn straight-bodied pens, and lots of them, get the Woodwrite ($695). Its rapid transverse handwheel and factory indexed cutter help you quickly and accurately cut straight pen bodies. Its unique dust port saves you a lot of shop cleaning.

| BRAND | MODEL | CAPACITY (INCHES) BETWEEN CENTERS | SWING OVER BED | SWING OVER TOOLREST BASE | MOTOR TYPE (AC/DC) | SPEED-CHANGING SYSTEM (1) | SPEEDS (RPM) |
|---|---|---|---|---|---|---|---|
| CARBA-TEC | II | 12 | 6 | 3¾ | DC | V/S, and 2-STEP PULLEYS | LOW 300-3200 HIGH 400-4200 |
| KLEIN | | 10½ | 5 | 3¾ | MOTOR NOT INCLUDED | 6-STEP PULLEYS | 500, 950, 1450, 2150, 3250, 5200 |
| SHERLINE | 4000 | 6½ | 3⅜ | 1⅞ | DC | V/S, and 3-STEP PULLEYS | LOW 70-1100 HIGH 300-2800 |
| WOODWRITE | 067 | 9½ | 4½ | 2½ | AC | 6-STEP PULLEYS | 500, 950, 1450, 2150, 3250, 5200 |

**NOTES:**

1. (V/S) Variable speed
2. (MT0) Morse Taper No. 0
   (MT1) Morse Taper No. 1
   (SC) Spring-loaded center
   (ST) Special taper with draw bar
   (T) ⅜" - 24 thread
3. (AL) Aluminum
   (CI) Cast iron
   (MS) Machined steel
4. E Excellent
   G Good
   F Fair
   P Poor

* With optional accessories

## A new Jet lathe is about to land

As we wrapped up this article we found out about a new, small Jet lathe set to hit the market in early 1998. Although a production sample was not available for testing, we thought you would like to know about this upcoming entry. This lathe features cast-iron construction and weighs 59 pounds. We were able to briefly try a prototype version of the lathe at a machinery trade show. Of the machines tested for this article, the Jet mini lathe (sorry, no model number, yet) most closely resembles in appearance the Vicmarc VL 100. However, the Jet lathe has a built-in, 1/4-hp motor, and is made in Taiwan. It ran smoothly and speed changes were a snap by moving a belt.

This lathe has 14" of capacity between centers, 10" of swing over its bed, and 6 speeds from 560 to 3,800 rpm. It should retail between $329 and $349. We will test a sample when one becomes available and tell you what we find out in a future issue.

Carba-Tec II

# THE BIG SCOOP ON MINI LATHES

| | DRIVE SPINDLE | | | CONSTRUCTION MATERIALS (3) | | STANDARD TOOLREST (INCHES) | PERFORMANCE EVALUATION (4) | | | | | | | ACCESSORIES (5) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIAMETER-THREADS PER INCH | TAPER (2) | TAILSTOCK TAPER (2) | BED | HEADSTOCK AND TAILSTOCK | POST DIAMETER | LENGTH | POWER | SPEED-CHANGING CONVENIENCE | CONTROL ("FRIENDLINESS") | TOOLPOST ADJUSTMENT | TOOLREST ADJUSTMENT | TOOLREST VIBRATION | OVERALL QUALITY | STANDARD | OPTIONAL | WARRANTY (YEARS) | COUNTRY OF MANUFACTURE (6) | WEIGHT (POUNDS) | SELLING PRICE (7) | COMMENTS |
| | 3/4-16 | MT1 | MT1 | CI | CI | 1/2 | 3 1/8 | F | E | E | G | E | E | G | FP, IV, LC, SD, SR | 3J, 4J, 4JC, CC, CN, CSC, DC, DJ, EX, FP, LR, MR, PM, SC, ST, VR | 2 | T | 36 | $270 | A good, general-purpose mini lathe at a low price. Ideal for learning how to turn. |
| | 3/4-16 | ST | T | AL | AL | 1/2 | 3 3/4 | G | G | E | G | E | E | E | FP, LC, SD, SR | 3J, 4J, CS, DC, DJ, DT, FP, GM, HW, LR, MR, PM, TJ | 1 | U | 25 with motor | 350 | Accuracy and accessories are its strong points. Price does not include motor and switch. |
| | 3/4-16 | MT1 | MT0 | MS | AL | 1/2 | Toolrest Not Standard | E | E | G | E* | E* | G | E | CCT, FP, FW, LC, MW, PM | 3J, 4J, CS, DT, IT, MR, NM, OT, RB, SR | 1 | U | 24 | 455 | Basically a pen-making lathe unless you buy optional tool posts and rests. Best motor and highest-quality components of tested lathes. |
| | 3/4-16 | ST | SC | MS | AL | 3/8 | 4 | G | P | G | P | P | G | E | B, CCT, DCM, FS, IV, LC, PM | 3J, 4J, CS, DC, DT, FP, NM, PA, SR | 1 | U | 29 1/2 | 695 | A complete package system for the person who wants to make lots of straight-bodied pens. Dust-collection manifold works well. |

5. (3J) 3-Jaw chuck
(4J) 4-Jaw chuck
(4JC) 4-Independent-Jaw chuck
(B) Base
(CC) Cup chucks
(CCT) Carbide cutting tool
(CN) Cone chuck
(CS) Collet set
(CSC) Combination screw chuck/faceplate
(DC) Drill chuck
(DCM) Dust-collection manifold
(DJ) Duplicator jig
(DT) Drilling tailstock
(EX) Expanding collet chuck
(FP) Faceplate
(FS) Foot switch
(FW) Finishing wax
(GM) Grinding and buffing mandrel
(HW) Handwheel kit
(IT) Inboard toolpost
(IV) Instruction videotape
(LC) Live center
(LR) Long toolrest (over 7")
(MR) Medium toolrest (4-7")
(MW) Merchandise worth $50
(NM) Numerous metalworking accessories
(OT) Outboard toolpost
(PA) Pen assembly press
(PM) Pen mandrel, collet, and collars
(RB) Riser blocks
(SC) Screw chuck
(SD) Spur drive
(SR) Short toolrest (under 4")
(ST) S-shaped toolrest
(TJ) Threading jig
(VR) V toolrest

6. (T) Taiwan
(U) United States

7. Prices current at time of article's production.

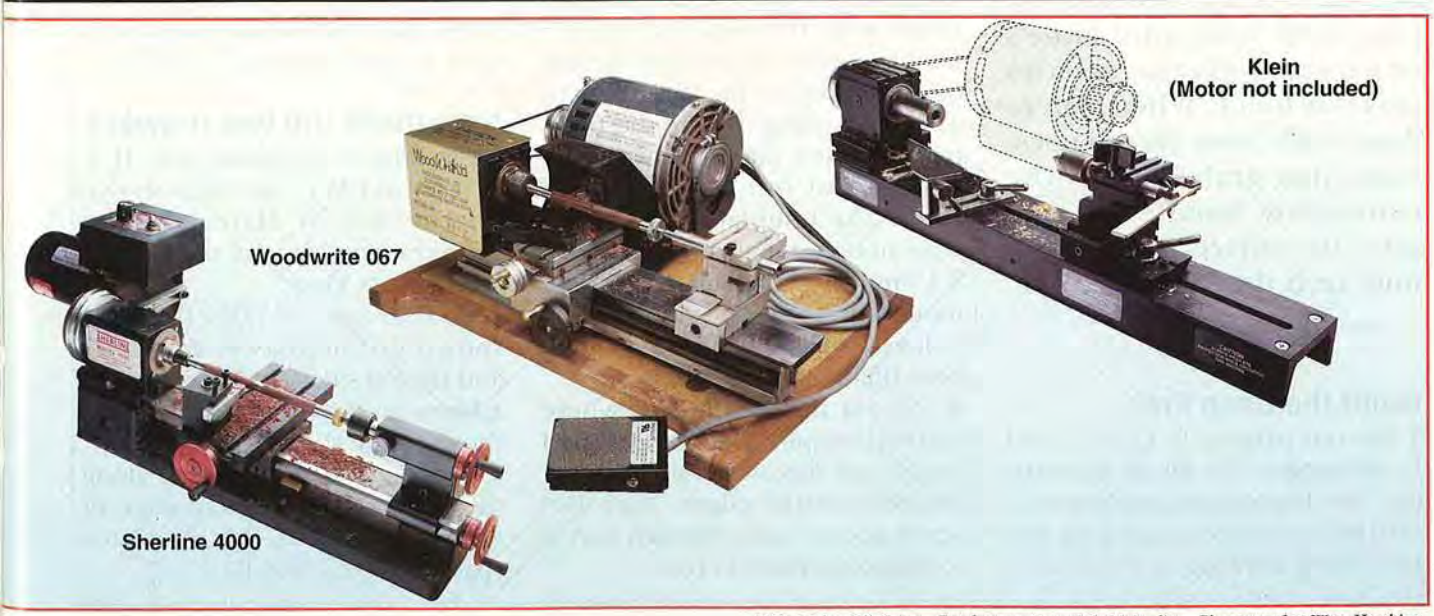
**WHERE TO CALL FOR INFORMATION:**

Carba-Tec
Available from Penn State Industries: 800/377-7297

Klein Design
425/226-5937

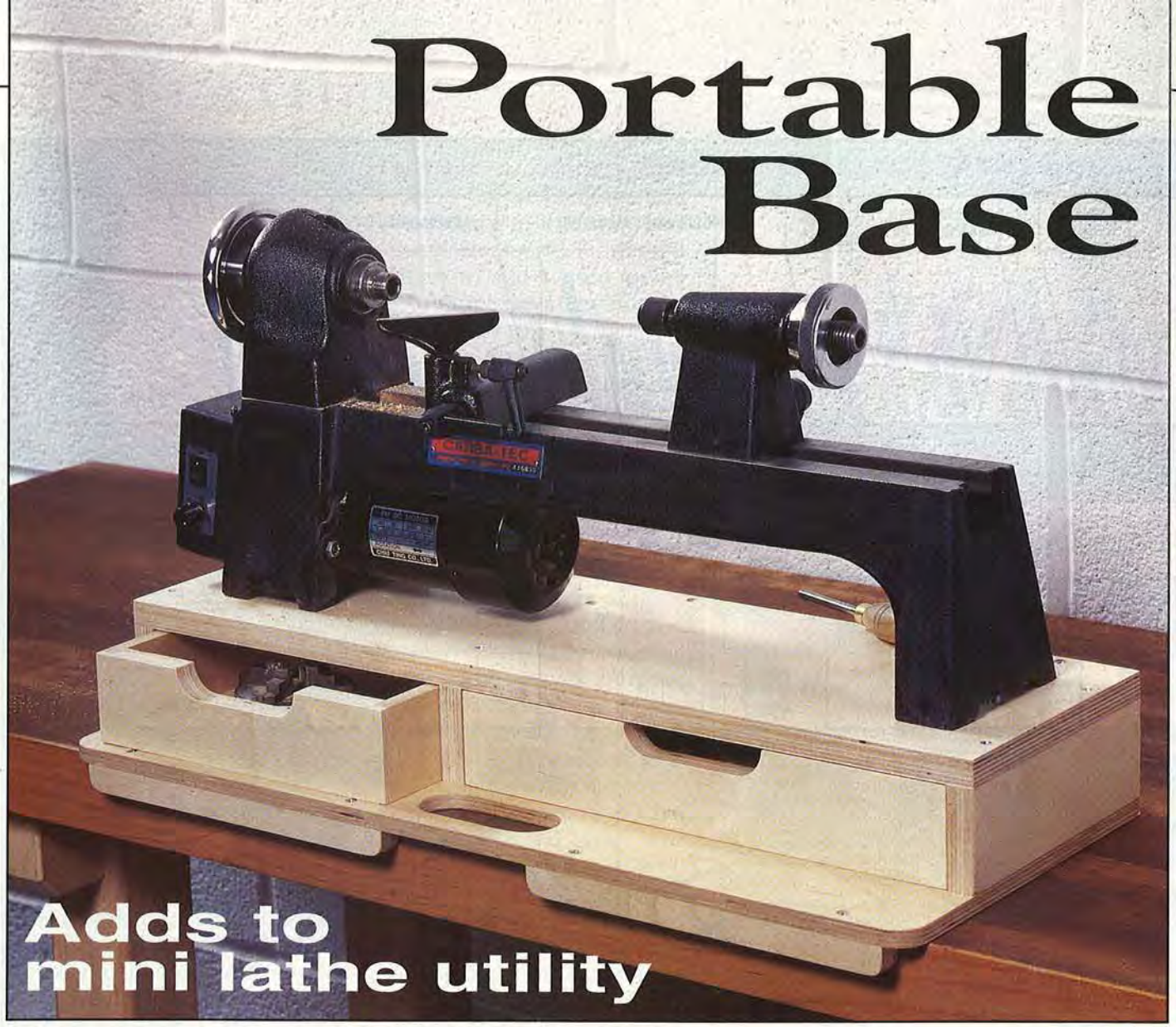
Sherline
Available from Hut Products for Wood: 800/547-5461

Woodwrite
888/966-3974




Written by Bill Krier Product testing: Bob McFarlin Photographs: Wm. Hopkins

# Portable Base



## Adds to mini lathe utility

**The two roomy drawers in this easy-to-build benchtop base keep your mini lathe's centers and other accessories close at hand. When you're done with your turning session, just grab hold of the convenient handle slot and put the entire unit away until next time.**

Print this article

### Build the base first

**1** Cut out parts A, B, C, D, E, and F, referring to the Bill of Materials and the Exploded View drawing on the *opposite page* and the Parts View drawing on *page 96*.

**2** Make a template of your lathe's mounting holes, if one didn't come with the tool. To make a template, turn the machine upside down and cover the bottom with a sheet of paper. Locate the holes by feel, then mark them with a pencil. Cut out the holes and check the template against the lathe bottom for accuracy.

**3** Using your template, lay out the mounting holes on part A. Drill holes of suitable size, and counterbore them on the bottom.

**4** Lay out the handle slot where shown on part B. Bore the end holes, and jigsaw between them. Round over the edges. Bore 1¼" screw access holes through part B to match the holes in part A.

**5** Miter-cut both ends of part C and one end of each part D. Then, glue and screw parts A, B, C, D, E, and F together as shown.

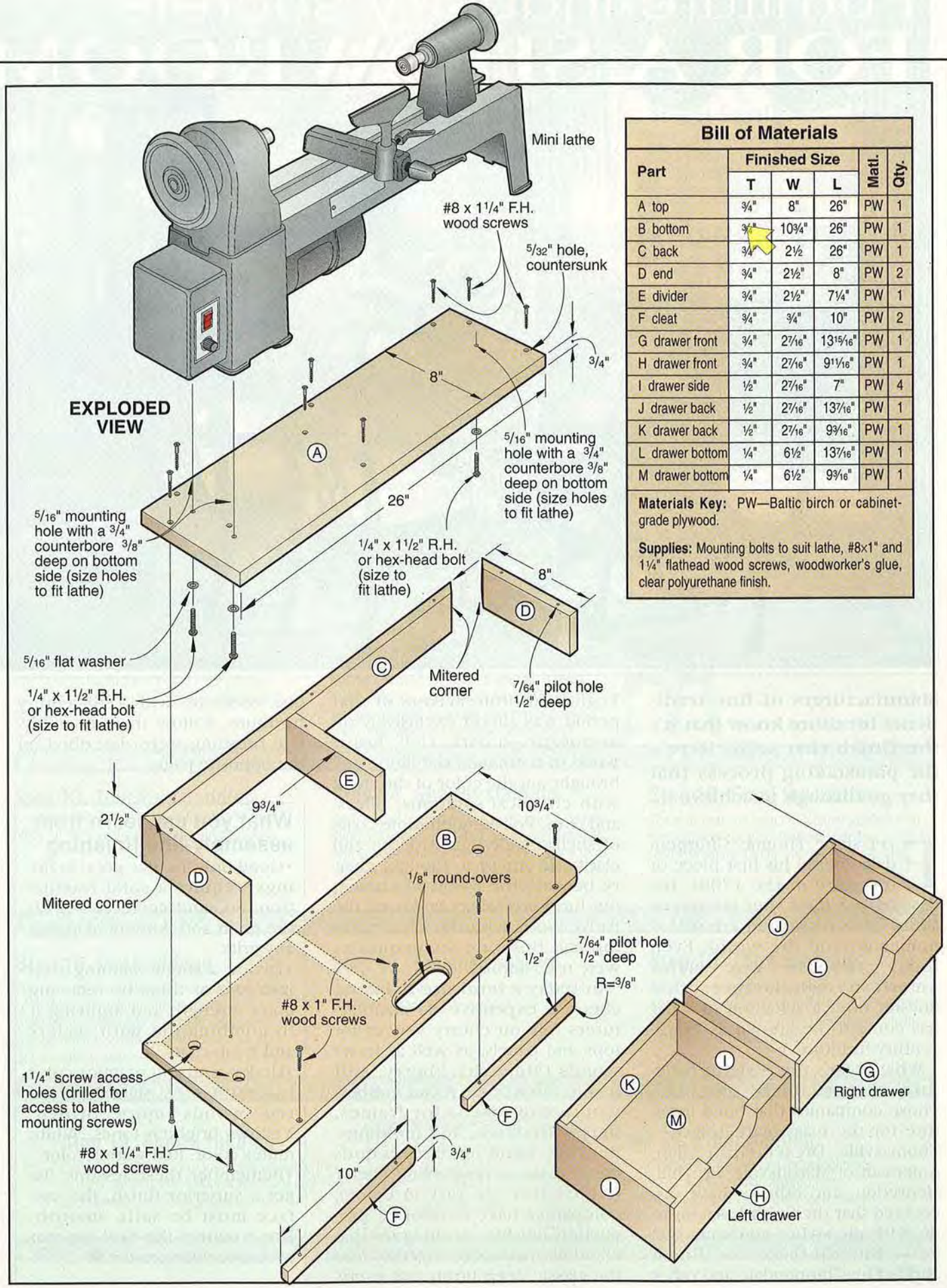
### Now make the two drawers

**1** Cut drawer components G, H, I, J, K, L, and M to the sizes shown on the Bill of Materials, the Drawers drawing, and the Drawer Fronts Parts View.

**2** Rout or saw ½" rabbets where shown on the drawer fronts (G and H) and sides (I). Note that the rabbets on the fronts are ½" deep, those on the sides, ¼".

**3** Form a ¼" rabbet ¼" deep along the inside of the bottom edge of each drawer front, side, and back (parts G, H, I, J, and K).

*Continued on page 96*




## Bill of Materials

| Part | Finished Size | | | Matl. | Qty. |
|---|---|---|---|---|---|
| | T | W | L | | |
| A top | ¾" | 8" | 26" | PW | 1 |
| B bottom | ¾" | 10¾" | 26" | PW | 1 |
| C back | ¾" | 2½ | 26" | PW | 1 |
| D end | ¾" | 2½" | 8" | PW | 2 |
| E divider | ¾" | 2½" | 7¼" | PW | 1 |
| F cleat | ¾" | ¾" | 10" | PW | 2 |
| G drawer front | ¾" | 2 7/16" | 13 15/16" | PW | 1 |
| H drawer front | ¾" | 2 7/16" | 9 1/16" | PW | 1 |
| I drawer side | ½" | 2 7/16" | 7" | PW | 4 |
| J drawer back | ½" | 2 7/16" | 13 7/16" | PW | 1 |
| K drawer back | ½" | 2 7/16" | 9 3/16" | PW | 1 |
| L drawer bottom | ¼" | 6½" | 13 7/16" | PW | 1 |
| M drawer bottom | ¼" | 6½" | 9 3/16" | PW | 1 |

**Materials Key:** PW—Baltic birch or cabinet-grade plywood.

**Supplies:** Mounting bolts to suit lathe, #8x1" and 1¼" flathead wood screws, woodworker's glue, clear polyurethane finish.

# Furniture-industry secrets FOR A SHOWROOM

**Manufacturers of fine traditional furniture know that it's the finish that sells. Here's the painstaking process that they go through to achieve it.**

Ever since Thomas Chippendale crafted his first piece of furniture in the 1700s, his designs and their later interpretations have furnished countless homes around the world. Even today, it's the rare major American manufacturer that doesn't offer a selection of what has come to be known as "18th-century furniture."

What makes this style of furniture so perennially popular? Those companies that build furniture for the mass marketplace—Thomasville, Drexel, Ethan Allen, American of Martinsville, Broyhill, Henredon, and others—have discovered that the finish has a lot to do with the style's continual success. But the superior finish applied by Chippendale and other English furnituremakers of that period was almost exclusively on mahogany—a dark, rich, heavy wood of renowned stability. They brought out the color of the stock with chemical solutions, fillers, and dyes. Polishing multiple coats of shellac added great depth and clarity. In America, though, cherry became the wood of choice, but furnituremakers endowed the native wood with the same coloring and finishing techniques as were used abroad.

In today's furniture industry, cherry is expensive, so manufacturers rely on cherry veneer for tops and panels, as well as lesser woods (alder, hackberry, soft maple, Southeast Asian rubberwood, and birch) for frames, finials, fretwork, and moldings. Because none of these woods come close to resembling cherry (which also can vary in color), companies have developed production finishing techniques that blend all the woods together into the classic deep finish that everyone associates with 18th-century furniture. Follow their assembly-line finishing steps described on the opposite page.

## What you can learn from assembly-line finishing

- Good finishes, like good buildings, require a solid foundation. So sand correctly—with the grain and without skipping any grits.
- Divide a single staining step into two or three by reducing color strength and applying it in combination with sealers and wash coats.
- Understand and practice color control: Green pigments turn red woods more brown. Yellows brighten tones. White mutes color. Red warms color.
- Remember these lessons: To get a superior finish, the surface must be satin smooth. Don't expect the final topcoat to rescue your project.

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# FINISH

## Step 1. Final sanding

The sideboard—built of 1" cherry veneer top, sides, and door fronts, rubberwood stiles, rails, and finials, and a base of poplar—receives a final orbital sanding with 180–240-grit silicon-carbide paper.

## Step 2. Sap staining

A weak, purplish-brown stain applied only to the rubberwood parts (called sapping) blends the nearly white "sapwood" to the color of cherry.

## Step 3. Equalizing

Similar to sap staining in Step 2, the addition of a green stain to all red-colored wood makes it more of a brown color. Mother-of-pearl powder is sometimes added as a brightener.

## Step 4. Prestaining

All wood in the piece is sprayed with a non-grain-raising (NGR) aniline dye of light, brownish yellow color.

## Step 5. Body staining

This overall spray staining determines the final finish color. Stain is made up of pigments, dyes, or a combination, often including mother-of-pearl powder and almost always "Midas gold," a trade-named pigment for rich color.

## Step 6. Wash coat

This low-solids lacquer clear coat seals the finish to prevent bleed-through and to raise wood fibers. Drying time: 5–15 minutes, followed by sanding with 240-grit. No scratches allowed.

## Step 7. Glazing

Sometimes with a padding machine, often by hand, a fill glaze is worked into the wood's pores to accentuate the grain and keep succeeding finish coats from sinking into the wood.

## Step 8. Sealing

Workers spray a nitrocellulose sealer onto the piece, then sand with 240-grit and wipe clean.

## Step 9. Antiquing with glaze

In this second glazing application, a mixture of Vandyke brown, burnt umber, and Transoxide red and/or yellow with touches of other colors is brushed and blended to tie together lighter-colored areas. For a "halo" border effect, the applicator leaves the wood edges slightly darker.

## Step 10. Topcoating

This first clear topcoat of nitrocellulose lacquer creates a sheen of 70. (The furniture industry seeks a finished sheen of 90 or better, meaning that 90% of the incident light shone on the wood's surface from a 60° angle is reflected back to a light sensor.)

## Step 11. Padding stain

To add more color, further accentuate the grain, and add interest to the finish, a worker skillfully hand rubs in with a cloth pad a combination of dyes mixed with shellac. It must blend properly on the piece moving at 20–28 feet per minute. Excesses are removed with 0000 steel wool or superfine Scotch-Brite.

## Step 12. Topcoating

This second topcoat enhances the finish clarity as it builds on the first topcoat.

## Step 13. Touch-up padding

A second application of padding stain to the piece on the moving line evens out mistakes.

## Step 14. Spatter staining

With a spatter head on the spray gun, a worker shoots "flyspecks" of dark brown stain overall. The specks confuse the viewer's eyes and force them to look at the entire piece, rather than at a specific area, which might contain a defect.

## Step 15. Final topcoating

Three to four wet coats of lacquer applied with conventional spray or high volume, low pressure (HVLP) require drying with heat for handling.

## Step 16. First rubbing

Final inspection for defects precedes application of rubbing lubricant (mineral spirits, light machine oil, gilsonite) with paint roller. Workers use 30-pound, straight-line sanders with 600-grit wet-or-dry paper to cut the lacquer smooth.

## Step 17. Second rubbing

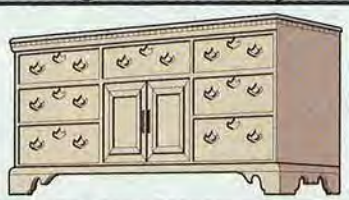
Procedure identical to first rubbing, but with grit size reduced to 800 or 1,000.

## Step 18. Third rubbing

Nearly the same as auto polishing, a worker attaches superfine Scotch-Brite to a 30-pound sander and spreads rubbing compound on all surfaces and polishes them.

## Step 19. Fourth rubbing

Dollops of rubbing compound are added to the surface. Buffing with a lamb's wool pad at 2,700 rpm removes all remaining scratches.



## Step 20. Final rubbing

An application of water or an industrial brand cleaner becomes the final cleanup step. Sometimes a coat of carnauba-based wax is added for mar resistance.

Written by J. W. Maner with Peter J. Stephano  Illustrations: Michael Gatzke  Photograph of Royal Court courtesy of Universal Furniture

# Fabulous Fireplace Surround

## This beauty will add sizzle to your home's interior

**Here's one home-improvement project that's as attractive and fun to make as any piece of fine furniture. Interested? We think you'll be surprised by how easy it is to construct, and by how you can tailor its look and size to suit your home's interior.**

### Take your choice of a clear or painted finish

Depending on the other woodwork in your home, you may elect to use a natural wood, as we did with the cherry surround *left*, or opt for a painted version as shown in the inset photo *below*. The painted surround will cost you considerably less. We built ours with MDF (medium density fiberboard) for less than $125 in materials. A similar hardwood surround may cost you three or four times that much.

Note, too, that with the painted surround we incorporated a manufactured "carving" in place of the rectangularly arranged applied moldings. (Although called a carving, the item we purchased through the source on the *page 63* is actually an embossed, light-colored hardwood.) These premade products work great for painted projects, but you'll have a hard time matching them with a clear-finished wood. Of course, you also can use the rectangular arrangement of moldings (shown on the cherry surround) on a painted surround with great results.

*Continued*

**You can adapt this surround to your home's interior, going with a natural wood such as cherry, left, or painted surround with manufactured carving, below.**

Print this article

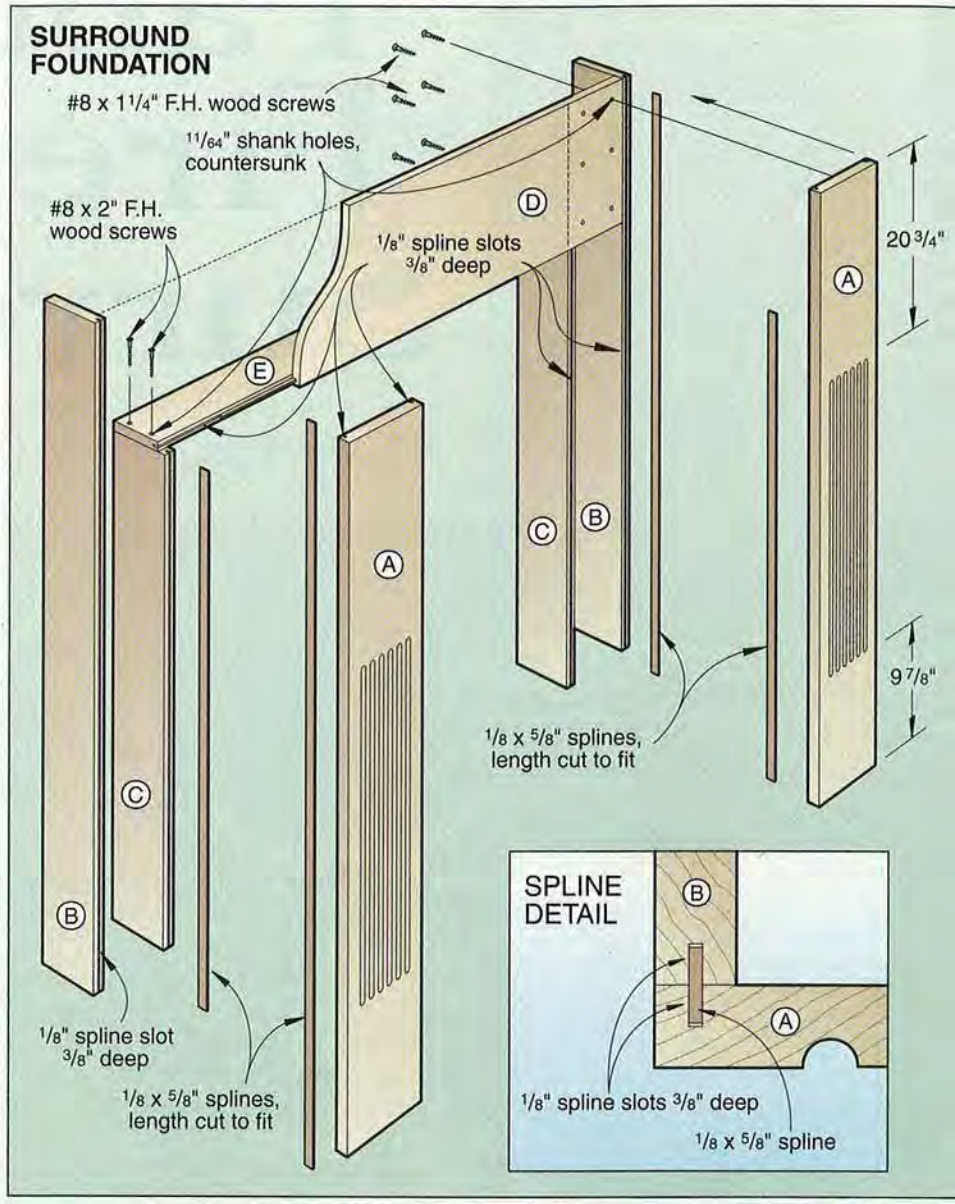
# Fireplace Surround

## First, determine the inside opening of the surround

The lengths of the pieces that make up your surround depend on the size of your fireplace. Most fireplaces have a noncombustible material such as tile, brick, or stone on the wall surrounding the firebox. (Some codes specify 8" of such noncombustibles between the fireplace opening and a wooden surround—check with your local building inspector.)

To determine the inside opening size of your surround, measure the width between the outer edges of these noncombustibles. Then, measure the height from the hearth to the top edge of the tile/brick/stone. Allow for a 1/16" gap between the surround and the tile/brick/stone by adding 1/8" to the width measurement, and 1/16" to the height.

***Note:*** *In the next steps you will build the entire surround (with moldings attached), then mount it to the wall as a complete unit. You will find the thickness and width dimensions of the major parts in the Bill of Materials* right. *We'll help you determine the lengths of these parts as you build the surround.*


SURROUND FOUNDATION
#8 x 1 1/4" F.H. wood screws
11/64" shank holes, countersunk
#8 x 2" F.H. wood screws
1/8" spline slots 3/8" deep
20 3/4"
9 7/8"
1/8 x 5/8" splines, length cut to fit
1/8" spline slot 3/8" deep
1/8 x 5/8" splines, length cut to fit
SPLINE DETAIL
1/8" spline slots 3/8" deep
1/8 x 5/8" spline

## Let's start with a solid foundation

**1** To build the surround foundation shown *above*, first rip parts A to 8¼" wide. Then, crosscut them to a length equal to the height of the inside opening plus 12⅜".

**2** On the back side of the parts A, measure down 20¾" from the top end and mark a line across the width. Screw a cleat along this line as shown in the Routing the Flutes drawing *opposite page*. Mark a similar line 9⅞" from the bottom end of parts A. These lines show where the flutes start and stop.

**3** Position the start- and stopblocks on the auxiliary router-table fence as shown on the Routing the Flutes drawing. The top flute mark should align with the left router-bit mark on the auxiliary fence, and the bottom flute mark should align with the right router-bit mark.

**4** Rout the flutes into the faces of parts A. Position the router-table fence for the first cut as shown in the Flute detail. Turn on the router, tilt up the top end of part A, lower it onto the bit, and immediately feed the workpiece from right to left. Tilt up the bottom end of part A as soon as the cleat contacts the stopblock. Rout the other part A. (Hesitating at the start, stop, or at any other point in the cutting pass will cause burning). Stop the router and readjust the fence for subsequent cuts.

**5** Cut parts B to the same length as parts A, and cut parts C to the height of the fireplace opening. Cut a centered, 1/8" spline slot 3/8" deep along one edge of parts B and C. Cut two such slots into the back side of parts A, positioning them so parts B and C align flush with the edges of parts A (see Spline detail *above*).

**6** Cut 1/8×5/8" splines that fit into the spline slots. You'll need two splines as long as parts B, and two splines as long as parts C. Keeping the bottom ends of parts A, B, and C flush, glue and clamp them.

**7** Cut part D as long as the width of the opening plus 15". (You may

## Bill of Materials

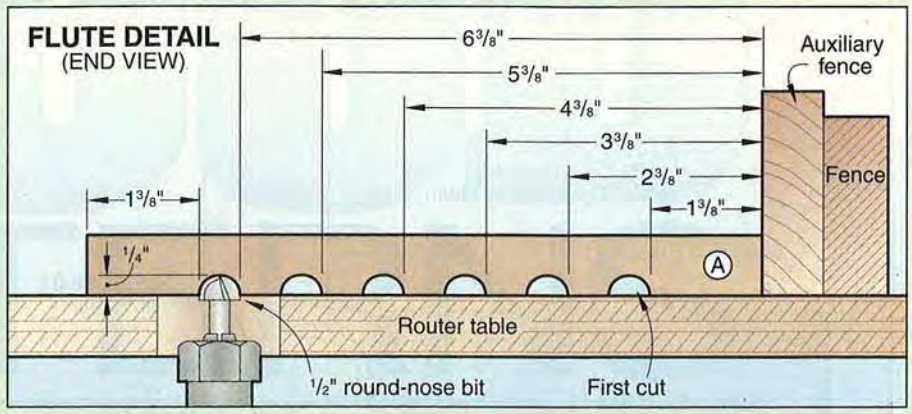
| Part | Finished Size T | W | L | Matl. | Qty.* |
|---|---|---|---|---|---|
| CABINET | | | | | |
| A pilaster front | ¾" | 8¼" | * | SS | 2 |
| B pilaster side | ¾" | 5½" | * | SS | 2 |
| C pilaster side | ¾" | 5½" | * | SS | 2 |
| D bridge front | ¾" | 12⅝" | * | SS | 1 |
| E bridge bottom | ¾" | 4¾" | * | SS | 1 |
| F base molding | ¾" | 7½" | * | SS | * |
| G molding | ½" | ⅜" | * | SS | * |
| H molding | ⅜" | ⅝" | * | SS | * |
| I molding | ⅜" | ¾" | * | SS | * |
| J filler scrap | ¾" | 2⅞" | * | SW | * |
| K molding | ¾" | ¾" | * | SS | * |
| L cove molding | 2¼" | 4½" | * | SS SW | * |
| M mantel | 1½" | 10⅞" | * | SS | * |

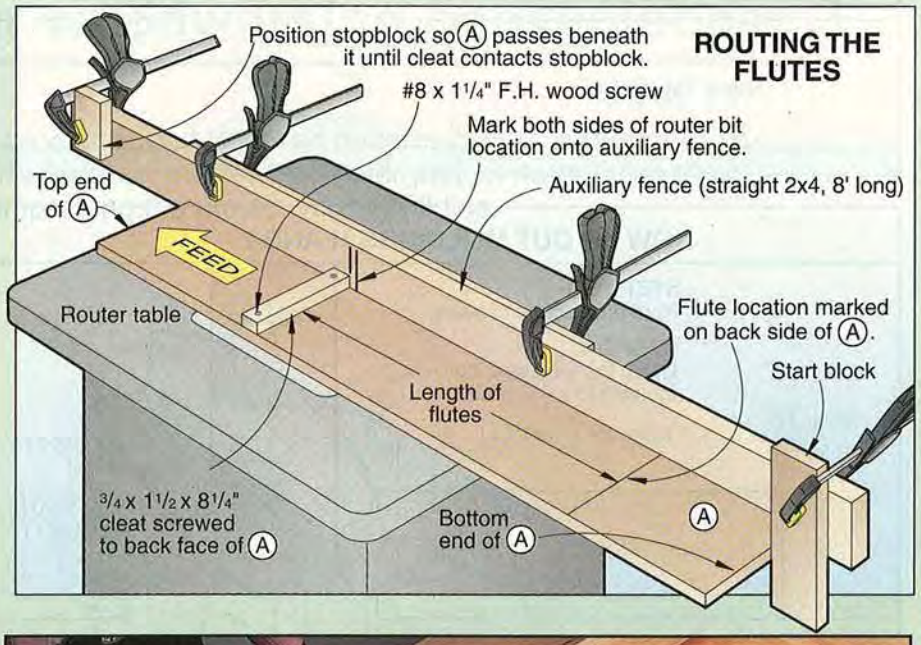
*(TBD) To Be Determined

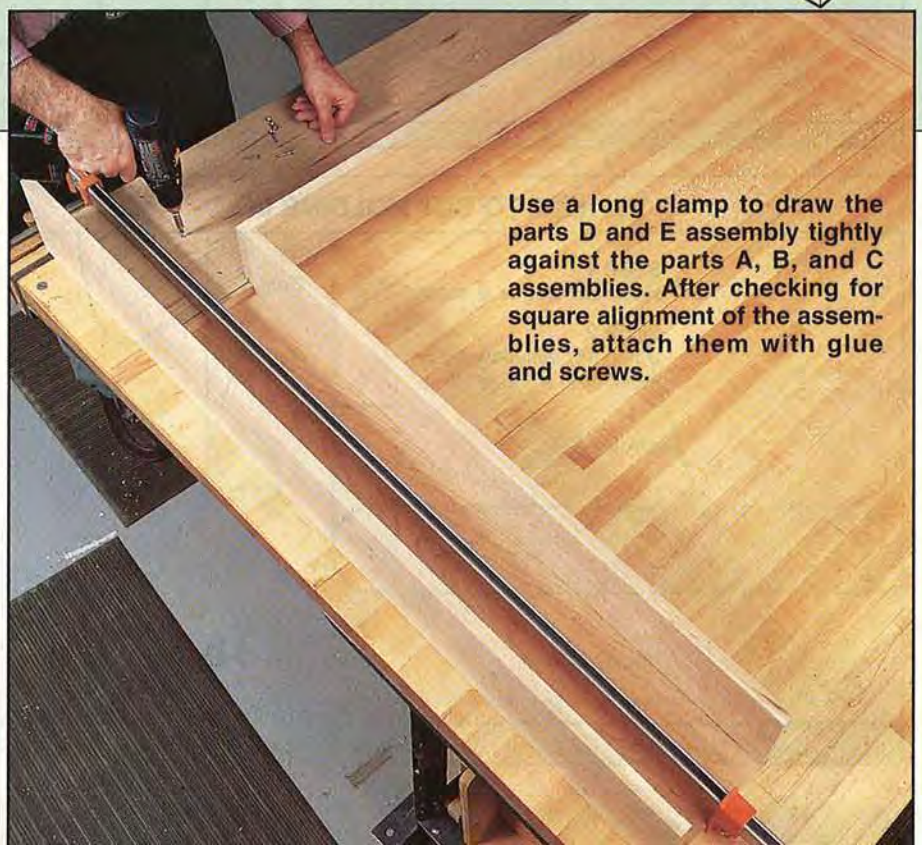
**Materials Key:** SS-solid stock, SW–scrapwood. For painted surrounds, use medium density fiberboard—MDF—for all parts.

**Supplies:** #8×1¼" F.H. wood screws, #8×2" F.H. wood screws, #6 finish nails.

**Buying Guide**
**Large carving for painted fireplaces.** Item 83072, 4½×29", $25.99 plus handling charge and tax where applicable. Call The Woodworkers' Store at 800/279-4441.





ROUTING THE FLUTES
Position stopblock so A passes beneath it until cleat contacts stopblock.
#8 x 1¼" F.H. wood screw
Mark both sides of router bit location onto auxiliary fence.
Auxiliary fence (straight 2x4, 8' long)
Top end of A
FEED
Router table
Flute location marked on back side of A.
Start block
Length of flutes
¾ x 1½ x 8¼" cleat screwed to back face of A
Bottom end of A
A



**Use a long clamp to draw the parts D and E assembly tightly against the parts A, B, and C assemblies. After checking for square alignment of the assemblies, attach them with glue and screws.**

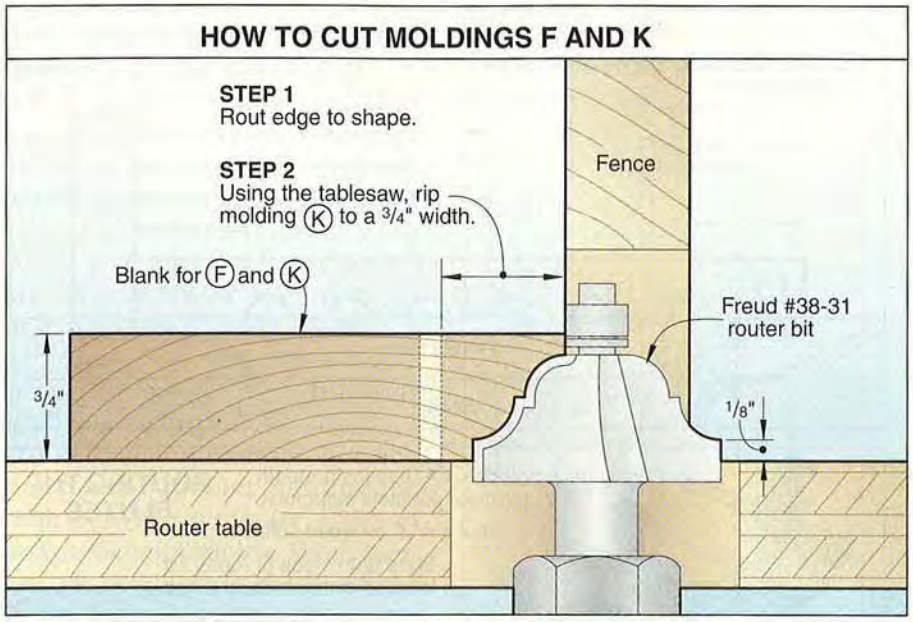
have to edge-join two or more pieces to make up part D.) Cut part E as long as the opening width plus 1½".

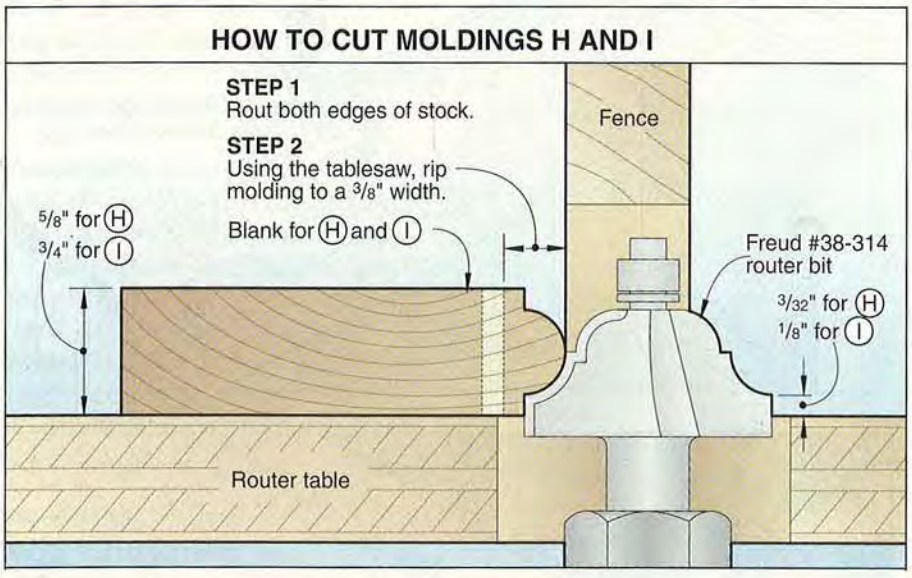
**8** Cut spline slots in parts D and E just as you did for parts A, B, and C. Join and sand parts D and E.

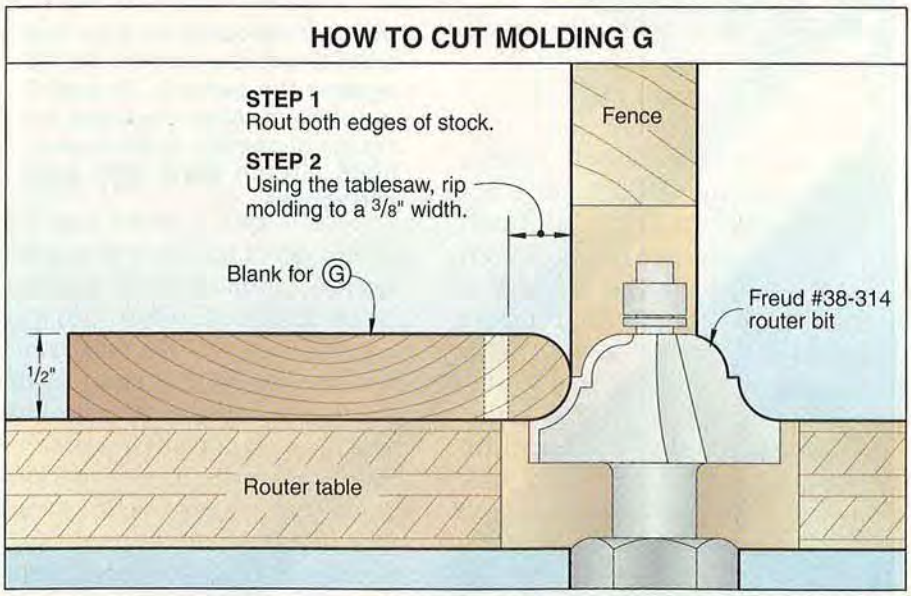
**9** Lay the parts A, B, and C assemblies (called pilasters) face down on a flat surface. Place the foundation bridge (parts D and E assembly) between the pilasters.

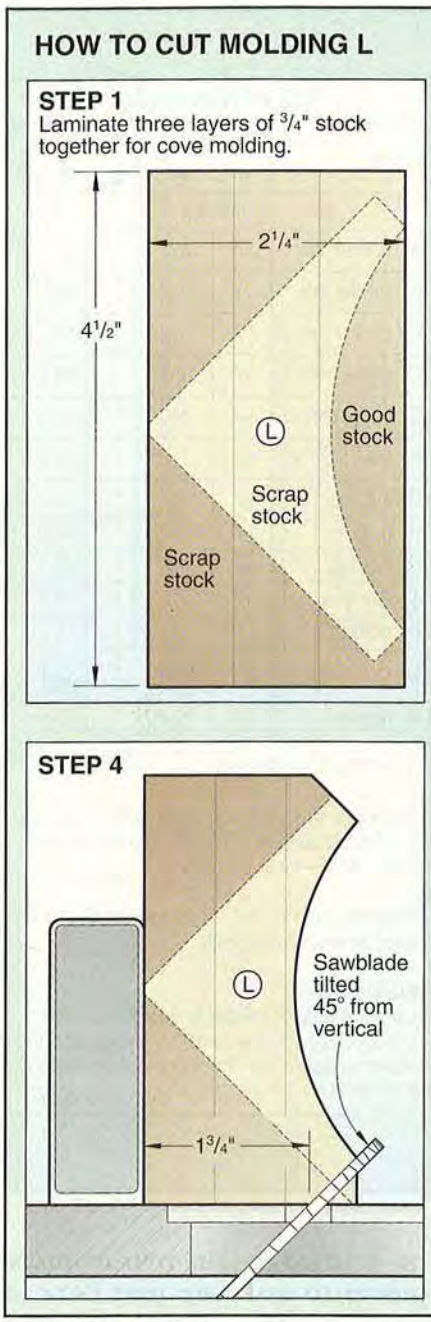
**10** Check the fireplace opening of this assembly for square and size. Glue, clamp, and screw the bridge to the pilasters as shown in the photo *right*.

*Continued*



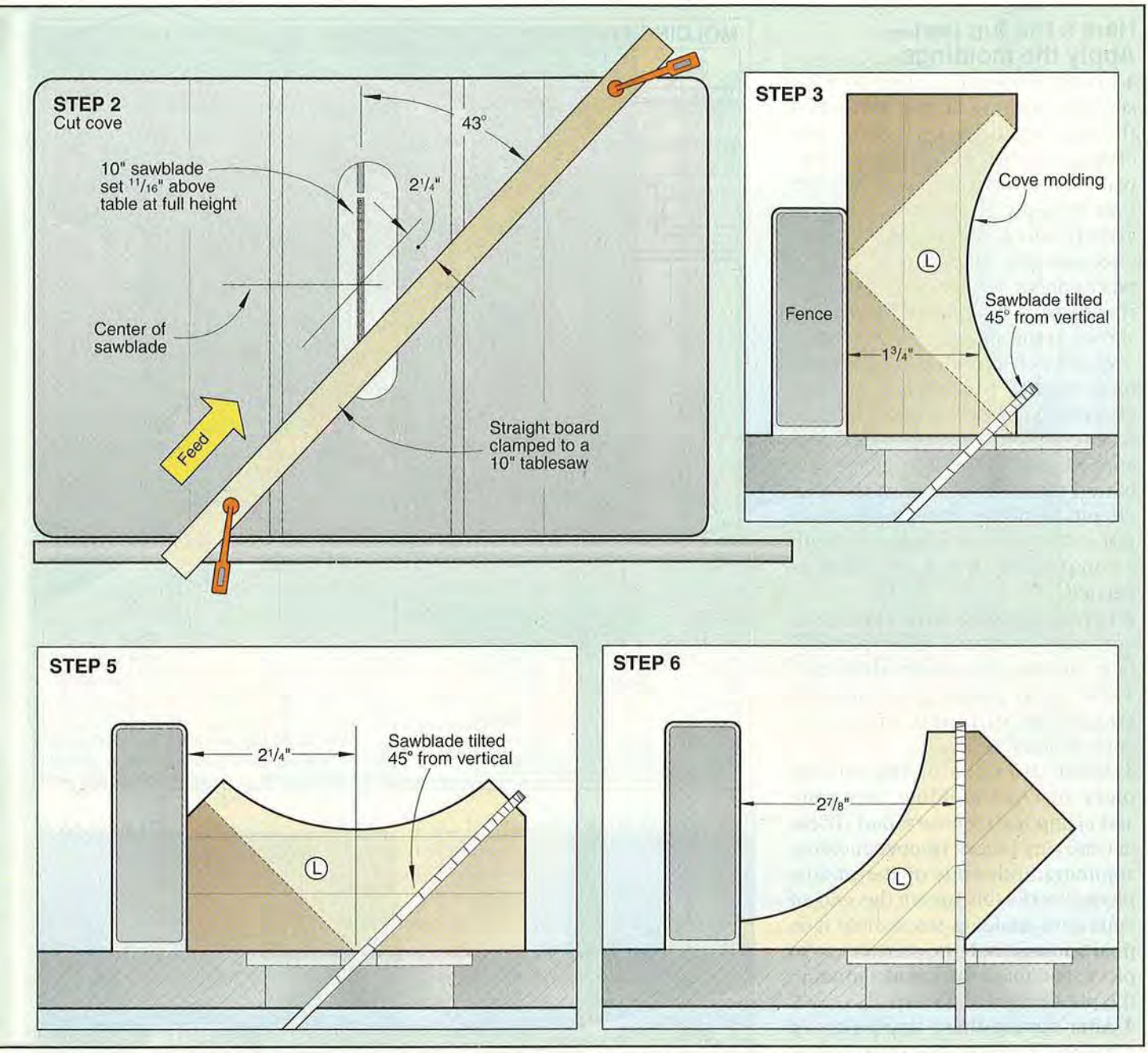




## And now it's time to fashion your moldings

In the following steps you will make moldings F, G, H, I, K, and L. Refer to the Molding Placement drawing for help in positioning these moldings. Measure your surround foundation to determine how many lineal feet of each molding you will need. Plan to make at least 1' extra of molding F, G, H, I, and K, and 2' extra of molding L, to make up for stock lost to miter cuts. It's a good idea to saw or rout small glue-stopping




grooves in the back of the moldings as described in the shop tip on *page 38*.

**1** Rip enough ¾" stock to 7¼" wide for the F moldings. For safety purposes, we prefer to make molding K (and other moldings less than 2" wide) from 2"-or-wider stock, then rip off the molded edge. Follow the How to Cut Moldings F and K drawing to make these moldings with a table-mounted router.

**2** Using the same procedure described in the previous step, refer to the How to Cut Moldings H and I drawing *opposite page* and rout moldings H and I.

**3** Adjust the height of the bit as shown in the How to Cut Molding G drawings and cut molding G.

**4** To make the large cove molding (L), first laminate a 4½"-wide piece of ¾"-thick stock to two pieces of scrap stock of the same dimension (see Step 1 in the How to Cut Molding L drawing). Clamp a straight board to your tablesaw as shown in Step 2 of the same drawing, and adjust the blade to a height of ⅛". Using a blade with at least 50 teeth, slowly and steadily feed the lamination over the blade. Use pushblocks for safety. Make four more passes, raising the blade ⅛" each time. For the final pass remove 1/16" of material with the blade set 11/16" high.

Now, sand the ridges left on the coved surface. See the shop tip on *page 36* for an effective method.

Complete the molding by sawing it as shown in Steps 3-6 in the drawing *above*. Take at least four passes to make the deep cuts in Steps 5 and 6 of the drawing.

*Continued*

## Here's the fun part—Apply the moldings

**1** Lay the surround face up on a flat surface. Starting at the bottom of the surround, miter, glue, and clamp moldings F, G, H, and I into place. (Wait until Step 6 of this section to apply the H moldings that are arranged rectangularly.) For exceptionally tight miters, cut the pieces about 1/32" too long and sand the miters to precisely 45° as shown in the shop tip on *page 34*.

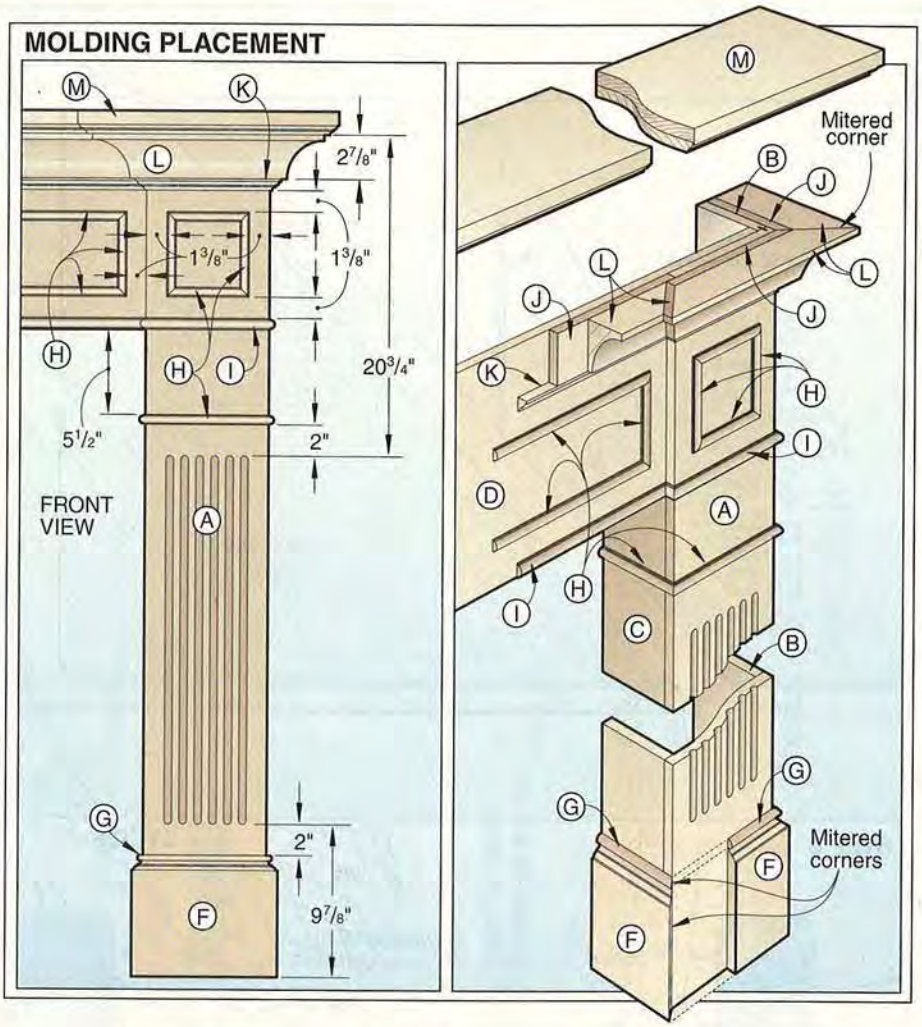
With each molding we had our best results by first gluing and clamping in place the middle pieces in each molding run. Then, we applied glue to the side pieces and butted them tightly against the middle pieces before clamping them in place. Remove any squeezeout with a damp cloth. When dry, sand as needed.

**2** Before applying cove molding L, you need to attach filler pieces J (see Molding Placement drawing). These scrap pieces go completely around the surround, in back of cove molding L.

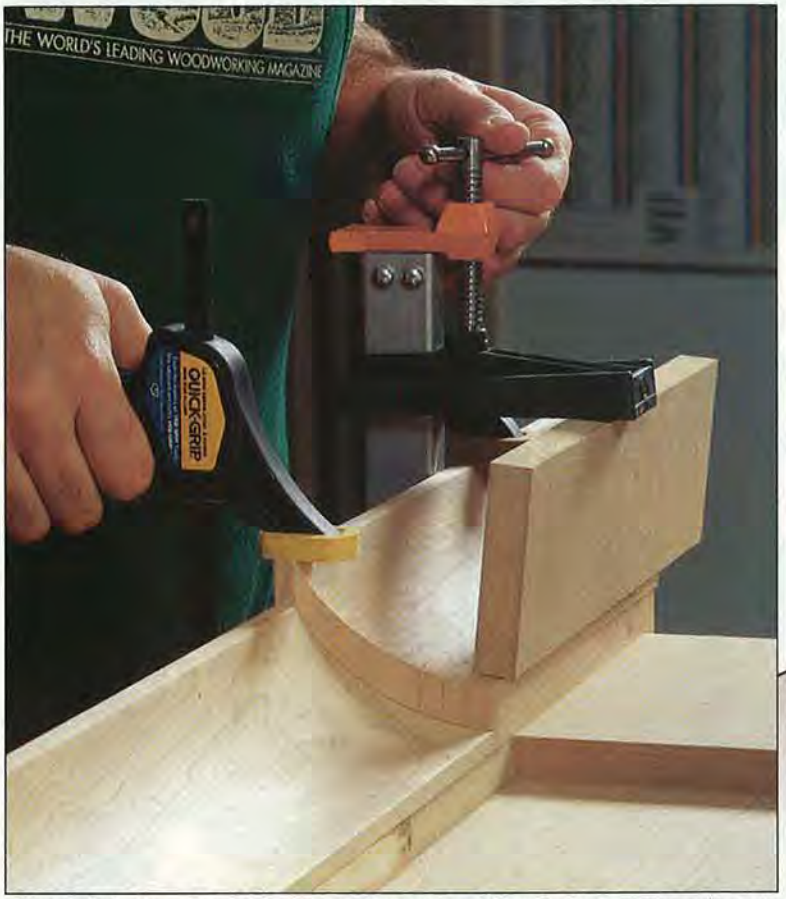
**3** Miter the ends of the middle piece of cove molding, and glue and clamp it to the surround. Then, cut the tiny pieces of cove molding adjoining both ends of the middle piece. To do this, miter the end of your cove molding stock, hold it in position against the middle cove piece, and mark the cut as shown in the photo *right*.

**4** After cutting these tiny pieces of cove molding, cut the cove pieces that attach to the front tops of the pilasters. Use these pieces to sandwich the tiny cove pieces (cut in the previous step) in place as shown on the *opposite page*.

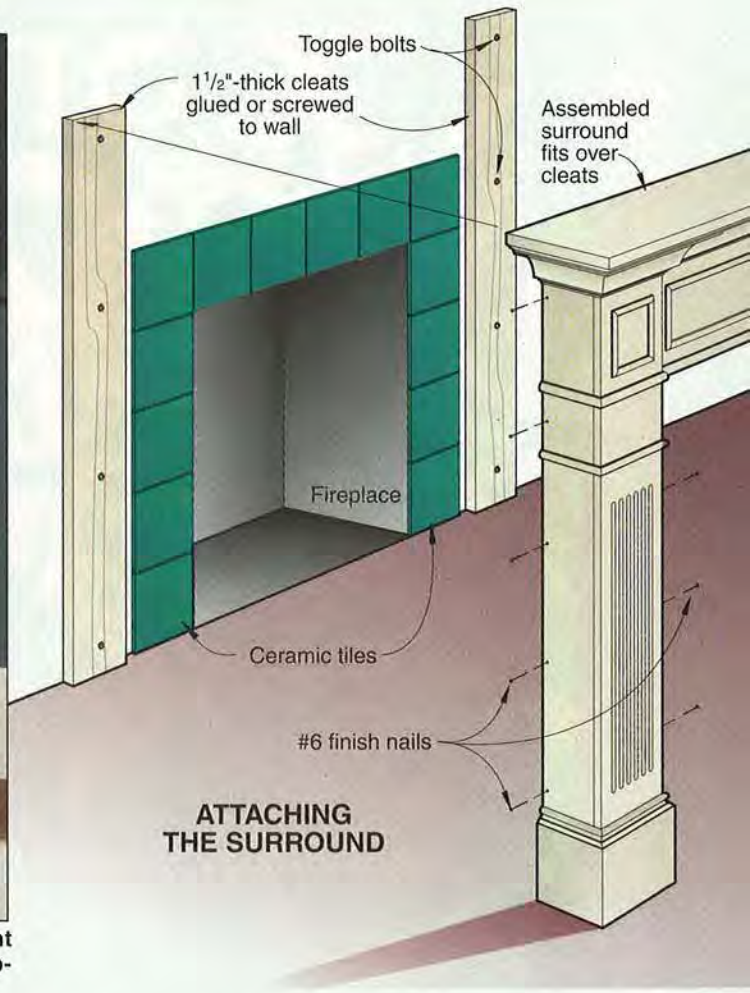
**5**. Apply moldings K using the application, marking, and cutting suggestions recommended for the cove molding. We used yellow woodworker's glue and held these moldings in place for 2-3 minutes. If you find it necessary to nail these moldings, then predrill the nail holes to prevent splitting.



**Mark the length of the shortest piece of cove molding onto the cove molding stock as shown. Cut this piece and clamp it as shown on the next page.**




Sandwich the shortest piece of cove molding between the adjacent pieces. A scrap block extends the reach of the clamp jaw and distributes clamping pressure to the bottom of the cove.




**6** As with the K moldings, we held the H moldings in place until the glue was tacky enough to hold them. On *page 34* you'll find a slick way of spacing these moldings in a rectangular pattern.

## Top off your surround with a mantel

**1** With the cove moldings in place you can determine the length of the mantel (M) by first measuring along the top of the surround from one end to the other. To this measurement add 2" (the mantel overhangs the cove moldings by 1" on the front and sides of the mantel).

**2** Laminate two ¾"-thick pieces to make the mantel.

**3** Profile the front and side edges of the mantel using the same Freud #38-314 router bit. Cut the full profile, just as shown in the How to Cut Moldings F and K drawing. But, for this large piece you will find it easier to use the bit in a handheld router.

**4** Set the mantel on top of the surround and check for gaps between the two pieces. You may have to use a belt sander, hand plane, or rasp to make the top of the surround flat.

**5** Glue and clamp the mantel to the top of the surround.

**6** Finish-sand all surfaces of the surround. Apply your finish of choice and allow it to dry completely before proceeding.

## Attach the surround to its wall

**1** As shown in the Attaching the Surround drawing, the surround attaches to two cleats mounted to the wall surrounding the fireplace. Make the cleats by ripping 2×8 stock (of the same length as parts A and B) to 6¾" wide. Check that the cleats fit snugly between parts B and C before proceeding to the next step. Round over the ripped edge of the cleat to make things easier when you slip the surround onto the cleats.

**2** Attach the cleats to the wall, spacing them 13/16" from the stone, brick, or tile. If you can't screw them to studs, secure them with a toggle-type hollow-wall fastener or with construction adhesive.

**3** Position the surround against the wall and fasten it to the cleats with #6 finish nails.

**4** Depending on the flatness of your wall, you may have slight gaps between the wall and surround. If so, mask off the edges of the surround with tape and fill the gaps with caulk. Paint the caulk to match the wall and remove the masking tape.

Written by Bill Krier with Chuck Hedlund Illustrations: Kim Downing; Lorna Johnson Photographs: Doug Hetherington

# Snowflakes For Fun

## You don't shovel these flakes. You scrollsaw them

**Are you dreaming of a white Christmas? Have one inside by scrollsawing a few —or a flurry—of our fancy flakes.**

## Saw up a storm

**1** For each snowflake, cut three 3½×3½" pieces from ⅛"-thick stock. (We cut ours from Baltic birch plywood. Solid stock would work, too, but would be more prone to breakage.)

**2** Photocopy the patterns for parts A, B, and C, *right*. Make two copies of part C. Using spray adhesive or rubber cement, adhere the patterns to the stock. Put two parts C on one blank. (To make multiple snowflakes quickly, you can stack-cut up to half a dozen copies at a time of each part. Just stack the blanks, with the patterned piece on top, and fasten them together with #17 brads of appropriate length driven into waste areas.)

**3** Chuck a ⅛" twist drill in your drill press. Drill the round hole near the end of each arm. Then, drill blade start holes inside the three interior cutouts on each arm. Back each piece with scrapwood as you drill to prevent tearout on the back.

**4** Fit your scrollsaw with a #5 blade (.038×.015" with 12½–16½ teeth per inch). Feed the blade through the start hole nearest the end of one arm, and make the inside cut.

**5** Move to the outermost inside cut on the next arm. When you have completed the four cuts, saw out the innermost areas on all four arms.

**6** After completing all the inside cuts on one part, saw around the outside pattern line. Cut out the remaining parts, following a similar sequence.

## Fashion a flake

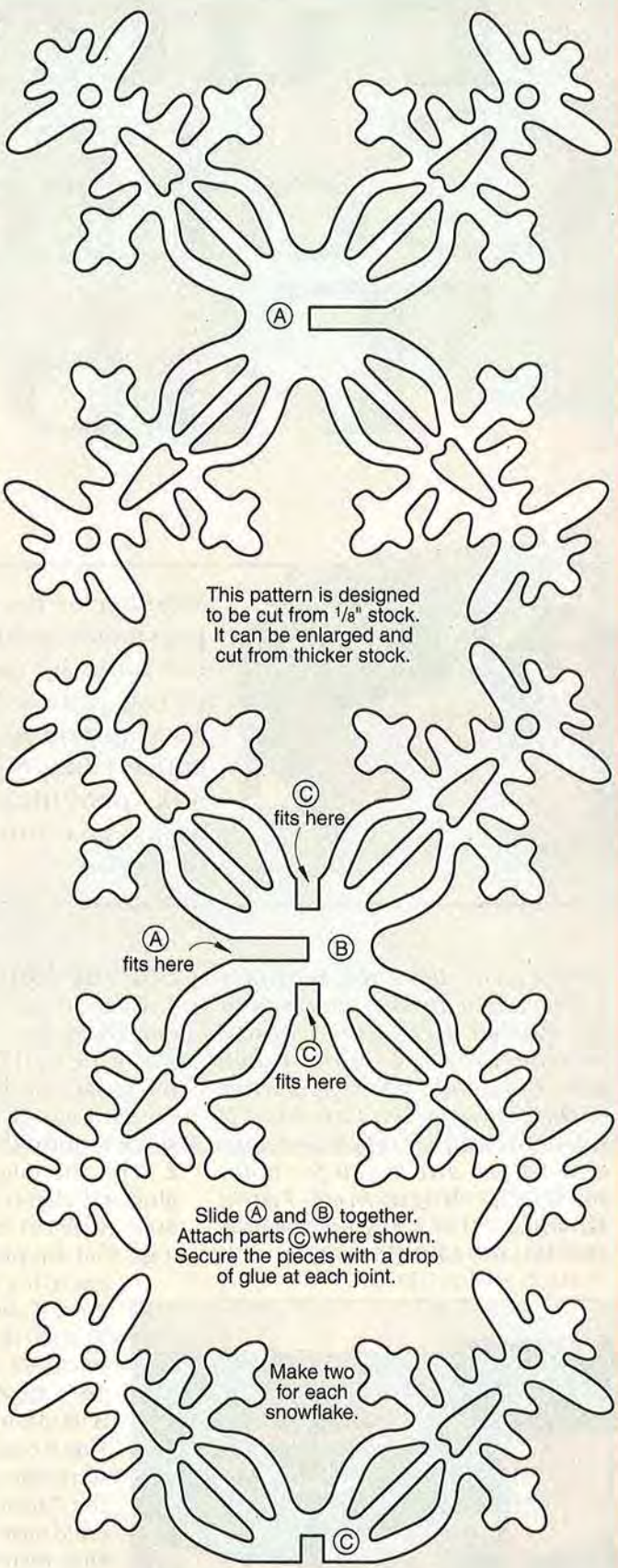
**1** Clean up any fuzzy edges with light strokes of 150-grit sandpaper. Assemble parts A and B by sliding the slots together. Hold the pieces together with a drop of glue at each joint.

**2** Glue parts C into the slots in part B. Align the parts, and set the flake aside while the glue dries.

**3** Spray on a coat of glossy white enamel. While the paint is still wet, sprinkle on some glitter. (We used crystal clear glitter; silver, gold, or iridescent would look great, too. We found all the finishing materials—paint and glitter—at a crafts-supply store.)

**4** For a different look, sand the surfaces smooth after the white paint dries. Then, spray on chrome silver or metallic gold paint. The smoother the surface, the better these metallics look.

**5** Loop monofilament or gold or silver cord through one of the ⅛" holes to hang the ornament.


Ⓐ
This pattern is designed to be cut from ⅛" stock. It can be enlarged and cut from thicker stock.
Ⓒ fits here
Ⓐ fits here
Ⓑ
Ⓒ fits here
Slide Ⓐ and Ⓑ together. Attach parts Ⓒ where shown. Secure the pieces with a drop of glue at each joint.
Make two for each snowflake.
Ⓒ

Project Design: Kevin E. Hawks Illustrations: Roxanne LeMoine; Lorna Johnson

# Double-Duty Futon Coffee Table

**Whether or not you've built the previously published pieces in our futon set (see the accompanying photos), you'll enjoy making and using this stylish coffee table. Naturally finished oak provides sturdy good looks, guaranteeing a lifetime of service.**

*If you don't have the February 1996 issue with the futon sofa or the October 1997 issue with the recliner and ottoman shown here, but would like a photocopy of the article(s), send an 8½×11" self-addressed stamped envelope and $4 per article ($8 for both) to WOOD Magazine's Futon Furniture, 1912 Grand Avenue, Des Moines, IA 50309-3379.*

## Start by forming the legs

**1** To form the 1½"-thick legs (A), cut 16 pieces of ¾"-thick oak to 3½" wide by 17" long. (Since 1½"-thick oak can be difficult to find, we laminated two pieces of ¾" stock to form the 1½"-thick legs.)

**2** With the edges and ends flush, glue and clamp two pieces face-to-face to form each of the eight legs. Cut or plane both edges of each leg for a 3⅝" width (you'll bevel-rip it to exact width later). Trim both ends of each leg for the 16¼" finished length.

**3** Hold the eight leg sections together face-to-face with the ends flush. Using the Leg drawing for reference, use a square to mark the mortise and groove locations on the *inside edge* of each leg. Use the square to verify that the marked mortises align.

**4** Use your drill press, fence, and a ¾" Forstner bit centered over the joint line to drill ¾" holes 1¾6" deep to remove most of the stock from each marked mortise as shown in the photo *at right*. Chisel the mortise corners square.

## Bevel-rip the legs, and add the splines

**1** Tilt your tablesaw blade to 45°, and bevel-rip one edge (the edge opposite the mortises) of each

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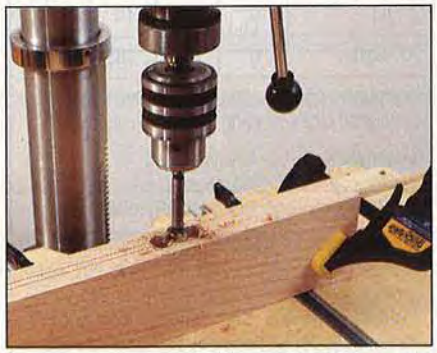


**Remove most of the waste from the marked mortises with a Forstner bit, using a fence and stops on your drill-press table for alignment.**

leg, cutting the leg to its final width of 3¼" where shown on the Bevel-Rip the Legs drawing on the *next page*.

**2** Using the Spline detail accompanying the Exploded View drawing for reference, tilt your tablesaw blade 45° from center, and cut a ⅛" spline slot ½" deep along the bevel-ripped edge of each leg where shown in the Cut the Spline Grooves drawing.

**3** Cut four pieces of ⅛"-thick stock to 15/16×16¼" long to form the four splines. Next, glue and clamp the mating pieces (A) for each leg as shown in the photo on the *next page*. Keep the leg ends flush and the miter joints tight when gluing and clamping.

## Machine the rails and wainscoting next

**1** To form the 1½"-thick bottom and top rails (B, C, D, E), cut ¾"-thick stock to the sizes listed in the Bill of Materials plus ¼" in width and ½" in length.

**2** Glue and clamp the pieces

*Continued*

# Futon Coffee Table

together the same way you laminated the leg pieces earlier. Later, cut the rails (B, C, D, E) to the width and then the length listed in the Bill of Materials and shown on the Parts View drawing.

**3** Purchase enough oak wainscoting for the front, back, and end frames (we purchased ours at a local home center). Measure the thickness of the wainscoting (ours measured 5/16" thick). Now, use a router and a straight bit to cut a 5/16" groove centered along the inside edge of each leg. Use a stop to end the groove at the mortises. The groove needs to be as wide as your wainscoting is thick.

**4** Cut a 5/16" groove 1¼" deep centered along the *bottom* edge of the top rails (B, D). If you rout this groove, do it in several passes, raising the bit each pass. Do not attempt to rout the 1¼"-deep groove in one pass, you might snap the bit. Then, cut or rout a 5/16" groove 3/8" deep centered along the *top* edge of the bottom rails (C, E).

**Use handscrew clamps to hold the splined leg pieces together at a right angle until the glue dries.**

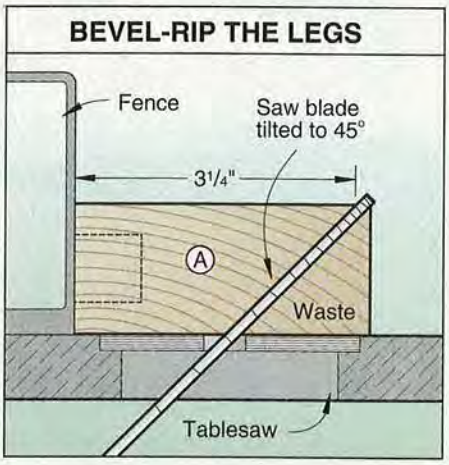
**5** Using the dimensions on the Tenon detail on the Frame Assembly drawing and the rails (B, C, D, E) on the Parts View drawing, cut the tenons on each end of each rail.

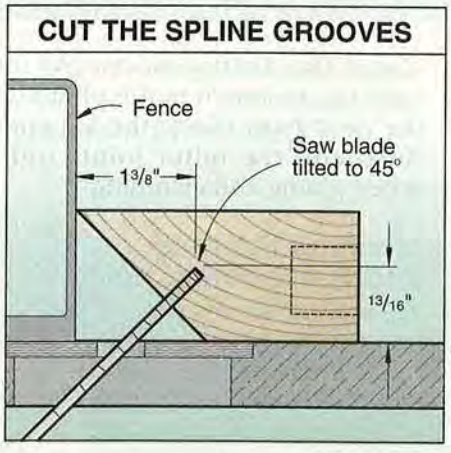
**6** Transfer the pattern from the Parts View drawing, mark the curved cutline, and cut and sand the bottom edge of the top rails (B, D) to shape.

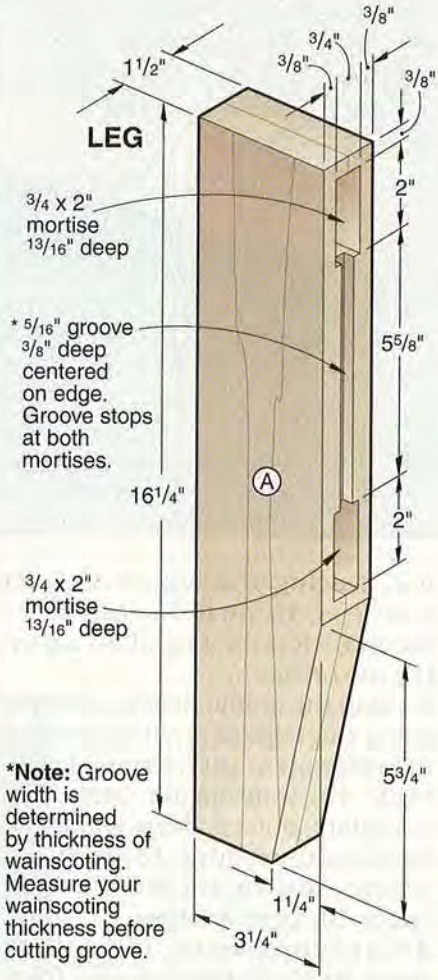
**7** Crosscut the oak wainscoting (F) to length. Finish-sand both surfaces of each piece.

## OK, let's assemble the oak end frames

**1** Dry-clamp (no glue) the front and back frames (A,B,C,F) to check the fit. You'll need to trim the outside edge of each end piece of wainscoting. The outside edges should protrude into the




**Bill of Materials**

| Part | Finished Size T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|
| A* legs | 1½" | 3¼" | 16¼" | LO | 8 |
| B* top front & back rails | 1½" | 2¾" | 41½" | LO | 2 |
| C* btm. front & back rails | 1½" | 2¾" | 41½" | LO | 2 |
| D* top end rails | 1½" | 2¾" | 17½" | LO | 2 |
| E* bottom end rails | 1½" | 2¾" | 17½" | LO | 2 |
| F wainscoting | 5/16" | 3⅜" | 6⅜" | OW | 38 |
| G cleats | ¾" | ¾" | 43½" | O | 2 |
| H cleats | ¾" | ¾" | 18" | O | 2 |
| I bottom panel | ¼" | 19½" | 43½" | OP | 1 |
| J* lid | ¾" | 24" | 48" | EO | 1 |
| K cleats | ¾" | 1⅜" | 19" | O | 2 |

*Initially cut parts marked with an * oversized. Trim to finished size according to the instructions.

**Materials Key:** LO–laminated oak, OW–oak wainscoting, O–oak, OP–oak plywood, EO–edge-joined oak.

**Supplies:** #8×¾" flathead wood screws, #8×1¼" flathead wood screws, #8×1¾" flathead wood screws, 4–#8×2" roundhead wood screws with 4–#8 flat washers, one right-hand lid support (Brainerd R1086XC) and one left-hand lid support (Brainerd L1086XC), 1½" continuous brass hinge 46½" long with #6×½" flathead brass wood screws, stain, clear finish.

3/8"-deep groove about 5/16". Mark the taper cutline on the bottom of each leg so the top end of the taper stops just below the point where the bottom rail (C) meets the legs (A).

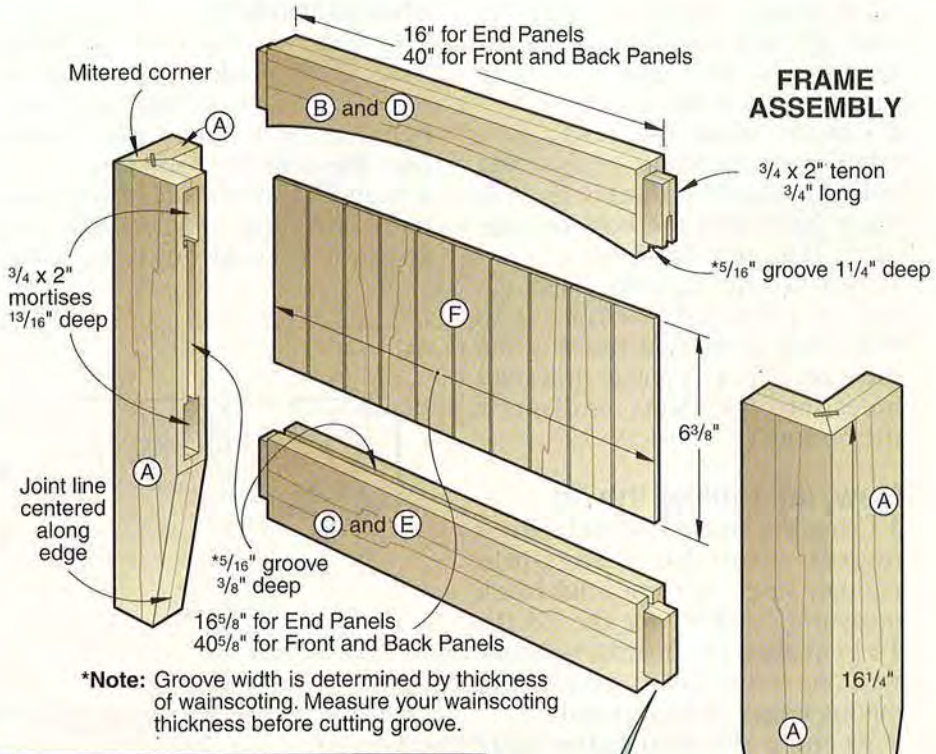
**2** Cut the tapers, and sand to remove the saw marks.

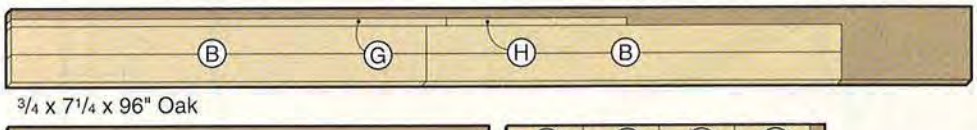
**3** Glue and clamp the two frames together, checking for square. (We did not glue the tongue-and-groove joints between the individual wainscoting pieces, nor did we find it necessary to glue the wainscoting in the grooves.)

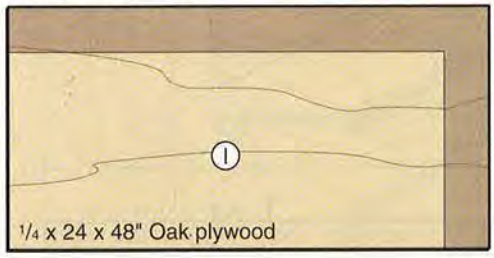
**4** To house the continuous hinge later, cut a 3/4" rabbet 1/8" deep along the top back edge of the back panel where shown on the Exploded View drawing and accompanying Lid Hinge detail.

**5** Check the fit of the remaining rails and wainscoting (D, E, F)

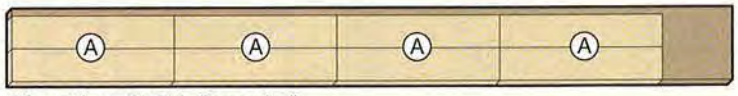
*Continued*

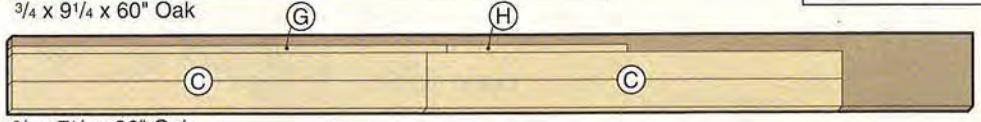

FRAME ASSEMBLY
16" for End Panels
40" for Front and Back Panels
Mitered corner
B and D
A
3/4 x 2" tenon
3/4" long
*5/16" groove 1 1/4" deep
3/4 x 2" mortises 13/16" deep
F
6 3/8"
Joint line centered along edge
C and E
*5/16" groove 3/8" deep
16 5/8" for End Panels
40 5/8" for Front and Back Panels
*Note: Groove width is determined by thickness of wainscoting. Measure your wainscoting thickness before cutting groove.
16 1/4"

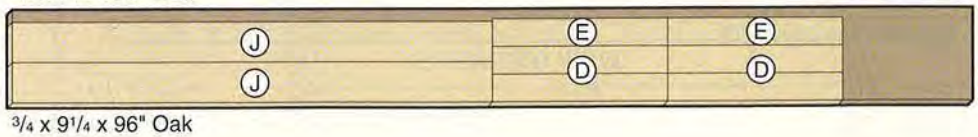


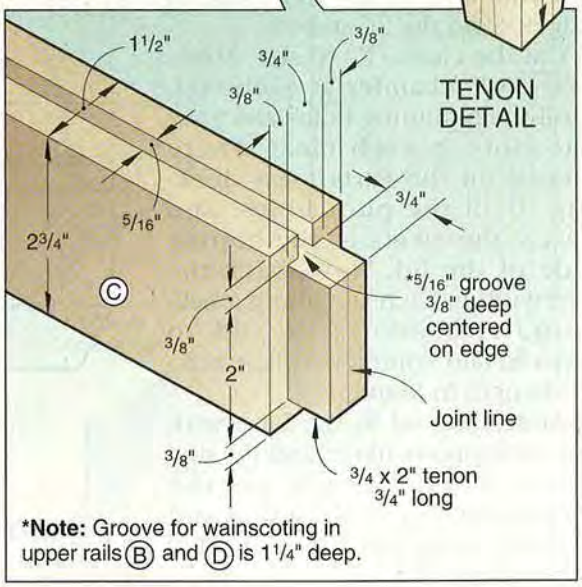



**CUTTING DIAGRAM**





# Futon Coffee Table

between the assembled front and back frames. Trim the outside edge of each end piece of wainscoting, and then glue and clamp the pieces in place.

**6** Cut the cleats (G, H) to size. Drill countersunk mounting holes, and glue and screw them in place flush with the bottom edge of the bottom rails (C, E).

**7** Measure the opening, and cut the ¼" plywood bottom (I) to size. Drill mounting holes along the edges, fit it in place, drill pilot holes into the cleats, and screw the bottom (I) in place.

## Now, let's make the lid

**1** Using the straightest and flattest boards available, edge-join enough stock to form a lid blank measuring 25×49" for the lid (J). To help align the boards, you may want to spline or biscuit-join the mating edges of each board.

**2** Keeping the boards flat, glue and clamp them together, edge-to-edge. Double-check the clamp-up with a straightedge to verify flatness, and reclamp if necessary.

**3** Trim the lid (J) to finished size, and rout a ⅛" round-over along all edges. Sand the lid smooth.

**4** Cut the cleats (K) to size. Mitercut a 30° chamfer at each end. Drill the mounting holes and form the slots in each cleat where shown on the Parts View drawing. Drill the pilot holes, and screw the cleats to the bottom side of the lid. Now, back the screw off in each slot about a half-turn. This allows the lid to expand and contract with seasonal changes in humidity.

**5** Attach the lid to the base with the continuous hinge and lid supports where shown on the Exploded View drawing and accompanying Lid Hinge and Lid Support details.

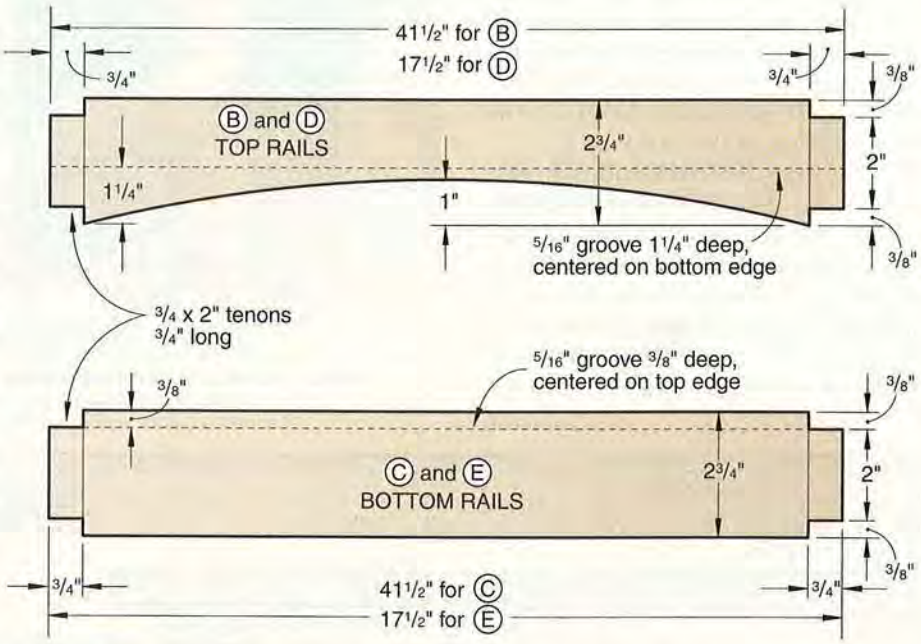
## Sand, stain, finish, and assemble

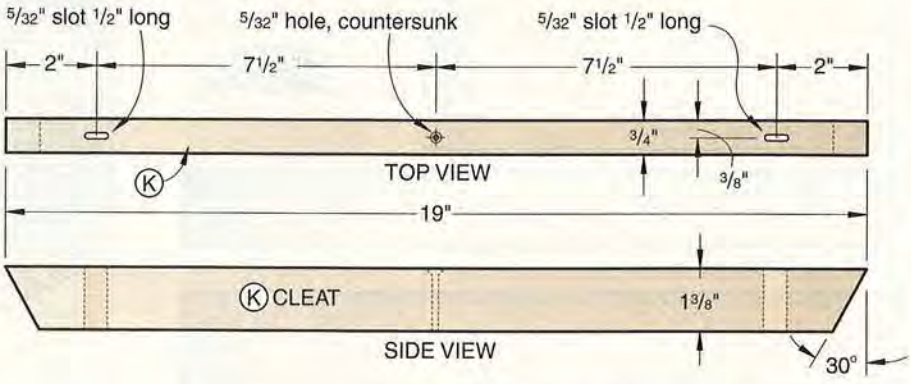
**1** Remove the top from the table base. Then, mask off the hinge or remove it from the base and top. Remove the lid supports. Finish-sand the table base and top.

**2** Stain if desired (we left ours natural), and apply a clear finish (we applied several coats of satin polyurethane, rubbing between coats with Scotch-Brite pads).

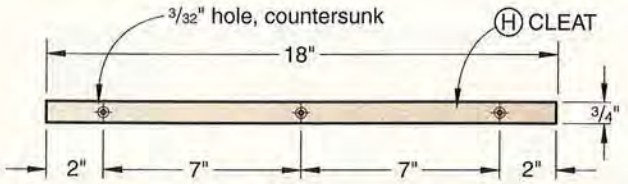
**3** Reattach the hinge connecting the top to the base. Screw the lid supports back in place.

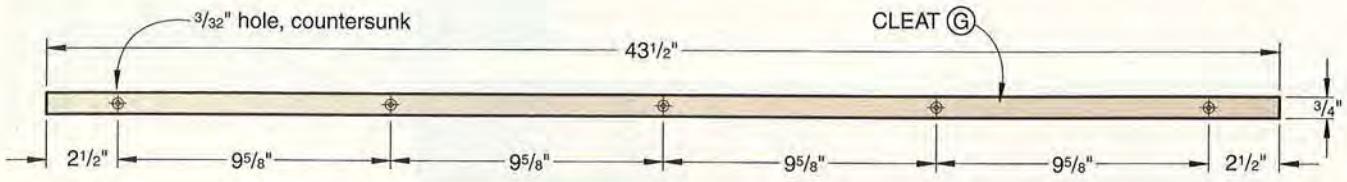
Written by Marlen Kemmet
Project Design: Chuck Hedlund
Illustrations: Kim Downing; Lorna Johnson
Photographs: Bill Hopkins; John Hetherington

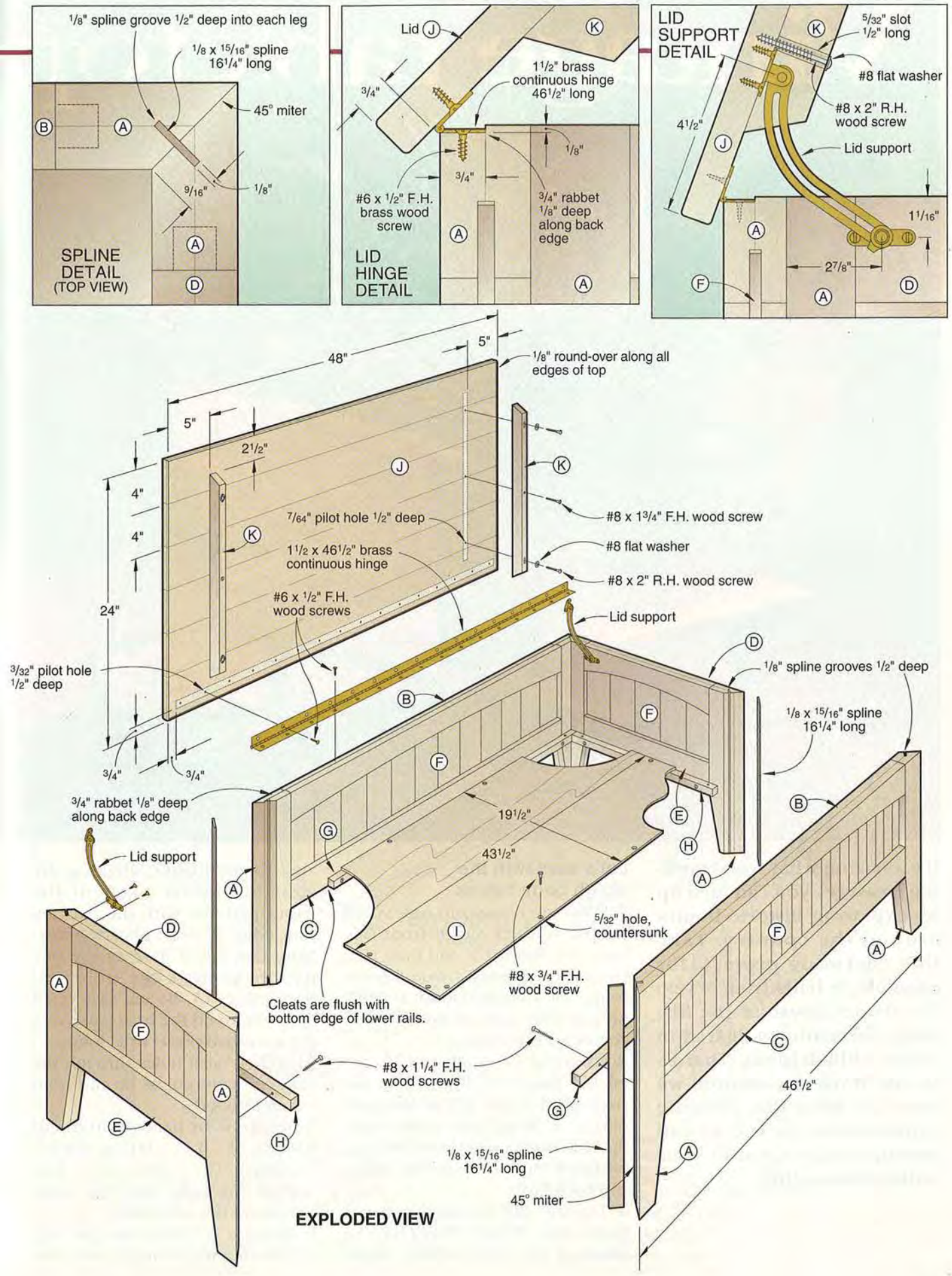



**PARTS VIEW**




1/8" spline groove 1/2" deep into each leg
1/8 x 15/16" spline 16 1/4" long
45° miter
9/16"
1/8"
SPLINE DETAIL (TOP VIEW)
Lid J
K
1 1/2" brass continuous hinge 46 1/2" long
3/4"
1/8"
3/4"
#6 x 1/2" F.H. brass wood screw
3/4" rabbet 1/8" deep along back edge
LID HINGE DETAIL
LID SUPPORT DETAIL
5/32" slot 1/2" long
#8 flat washer
#8 x 2" R.H. wood screw
4 1/2"
Lid support
1 1/16"
2 7/8"
48"
5"
1/8" round-over along all edges of top
5"
2 1/2"
4"
4"
24"
7/64" pilot hole 1/2" deep
1 1/2 x 46 1/2" brass continuous hinge
#6 x 1/2" F.H. wood screws
#8 x 1 3/4" F.H. wood screw
#8 flat washer
#8 x 2" R.H. wood screw
Lid support
3/32" pilot hole 1/2" deep
3/4"
3/4"
1/8" spline grooves 1/2" deep
1/8 x 15/16" spline 16 1/4" long
3/4" rabbet 1/8" deep along back edge
19 1/2"
43 1/2"
5/32" hole, countersunk
#8 x 3/4" F.H. wood screw
Cleats are flush with bottom edge of lower rails.
#8 x 1 1/4" F.H. wood screws
46 1/2"
1/8 x 15/16" spline 16 1/4" long
45° miter
EXPLODED VIEW

# Vintage tabletop

**It's amazing what woodworking treasures you can turn up by exploring historic homes around the country. Take this charming project, for example. It hails from Wyck, the Haines house in the historic Germantown district in north Philadelphia. Thanks to The Wyck Association, we now can offer this pleasing reproduction to you to add nostalgia and charm to your holiday decorating.**

Print this article

### Let's start with the sleigh body pieces

**1** Plane or resaw enough stock for the ¼"-thick sleigh front (A), back (B), sides (C), and base (D). Or, see the Buying Guide for our source of a hardwood kit for this project. (We used straight-grained cherry for our sleigh.)

**2** From the ¼" stock, cut blanks for the pieces (A, B, C, D) to the sizes listed in the Bill of Materials plus ½" in length and width. Stick the side blanks together with double-faced tape, keeping the edges and ends flush.

**3** Transfer the full-sized patterns from the *WOOD PATTERNS®* insert in the center of the magazine to the blanks, aligning the straight bottom edges of the paper patterns with the flat bottom edge of each cherry blank. Note that you'll have to use one pattern to mark the front and back pieces (A, B) and that you'll have to extend the base pattern to get a finished piece 13⅜" long.

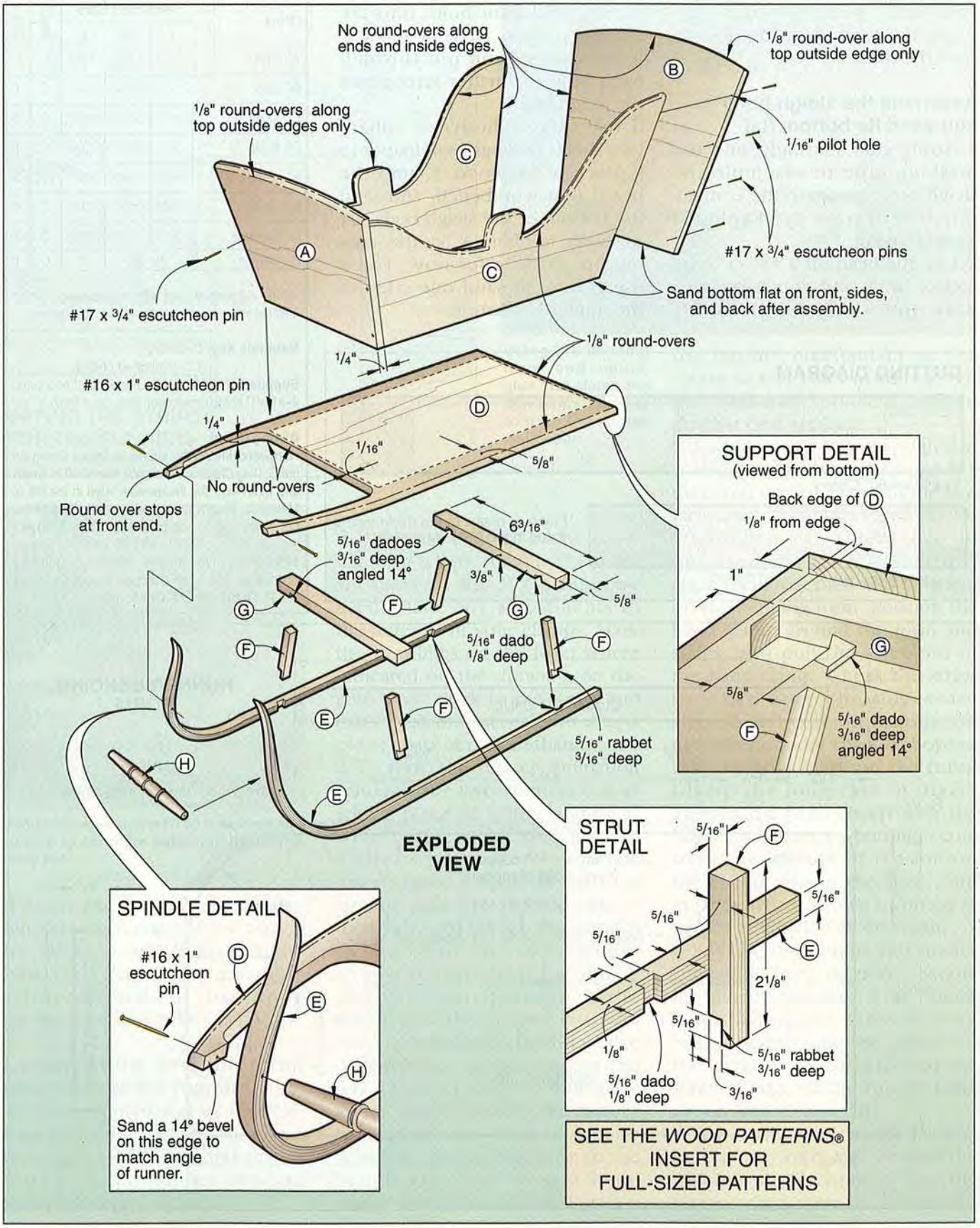
**4** Drill 1/16" nail holes through the marked centerpoints on the front (A) and back (B).

**5** Scrollsaw or bandsaw the four pieces (A, B, C, D) to shape. Separate the sides (C), and remove the tape. Sand the edges to remove the saw marks.

**6** Mount a ⅛" round-over bit into a table-mounted router, and rout

# sleigh

## An early-1800s reproduction from one of America's historic homes



# Vintage tabletop sleigh

the pieces where shown on the full-sized patterns and the Exploded View drawing. Finish-sand the pieces.

### Assemble the sleigh body and sand its bottom flat

**1** Apply glue sparingly, and use masking tape to assemble the sleigh body pieces in the configuration shown on the Exploded View drawing.

**2** Clip the head off a #17×1" wire nail or brad, and chuck it into a hand drill. Using the previously drilled 1/16" nail centerpoints as guides, drill pilot holes into the mating pieces. Drive a #17×3/4" brass escutcheon pin through each hole to further strengthen the sleigh body.

**3** Use spray adhesive to adhere two sheets of 80-grit sandpaper to a piece of plywood. Clamp the board to a workbench, and sand the bottom of the sleigh body flat as shown in *photo A*. Set the sanding board aside for now; you'll use it later to sand one edge of the runner lamination.

**Bill of Materials**

| Part | Finished Size T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|
| A* front | 1/4" | 4 1/2" | 6 9/16" | C | 1 |
| B* back | 1/4" | 6 9/16" | 7 1/8" | C | 1 |
| C* sides | 1/4" | 5 11/16" | 11 3/8" | C | 2 |
| D* base | 1/4" | 6 7/16" | 13 3/8" | C | 1 |
| E* runners | 5/16" | 5/16" | 20" | LC | 2 |
| F struts | 5/16" | 5/16" | 2 1/8" | C | 4 |
| G supports | 3/8" | 5/8" | 6 3/16" | C | 2 |
| H* spindle | 3/8" dia. | | 4" | C | 1 |

Initially cut parts marked with an *oversized. Trim to finished size according to the how-to instructions.

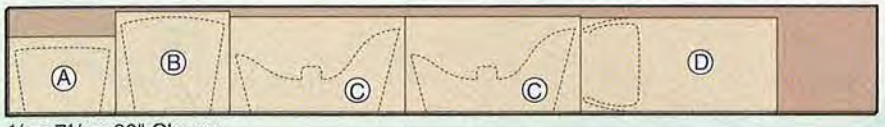
**Materials Key:** C–cherry, LC–laminated cherry.

**Supplies:** 14–#17×3/4" brass escutcheon pins, 2–#16×1" brass escutcheon pins, clear finish.

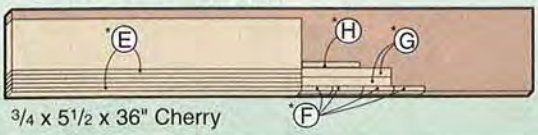
**Buying Guide**

**Hardwood kit.** All the individual pieces shown on the Cutting Diagram cut slightly oversized in length and width from the thicknesses listed in the Bill of Materials. Plus a preturned spindle (H) and the necessary escutcheon pins. Available in cherry or walnut. Kit no. W101, $21.95 ppd. for one or $89.95 for five sleighs. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Or call 800/524-4184 to order.

**CUTTING DIAGRAM**

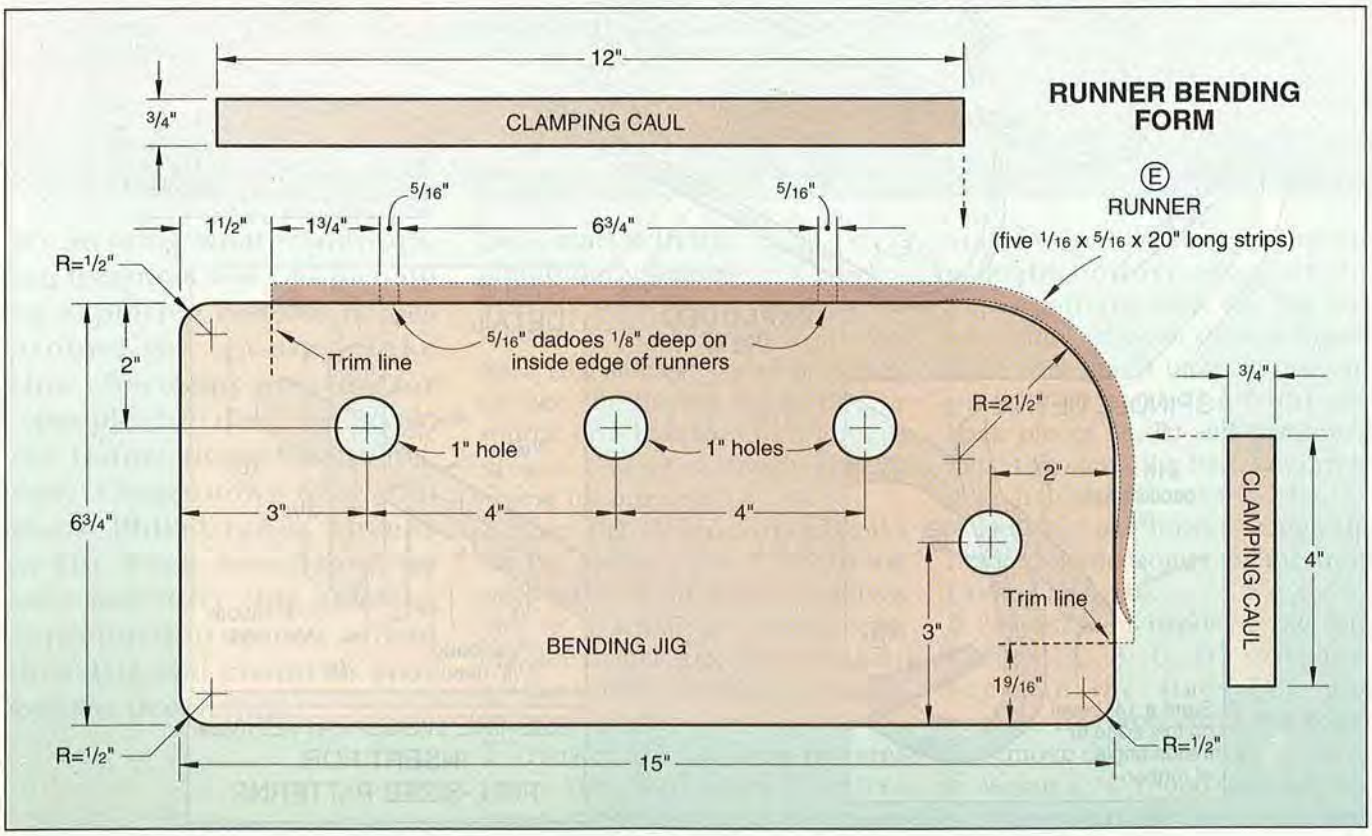


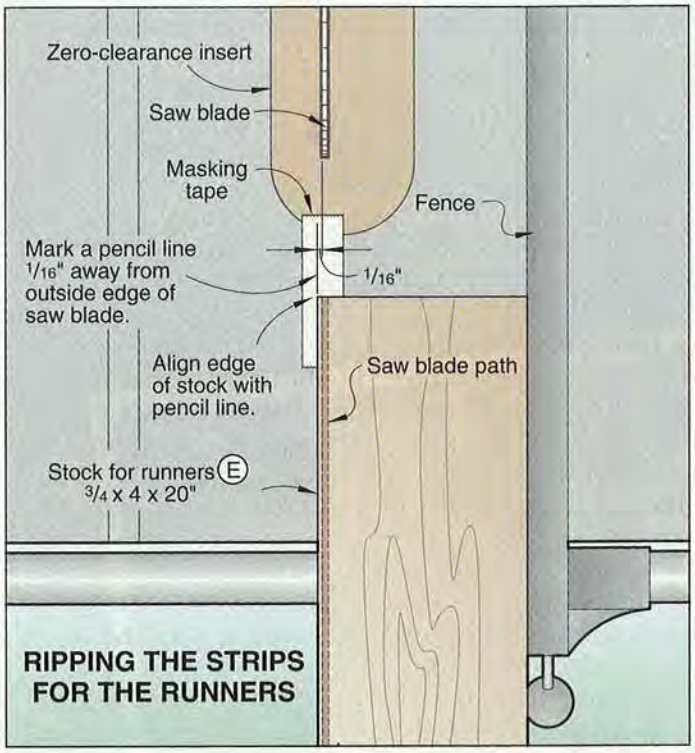

1/4 x 7 1/4 x 60" Cherry

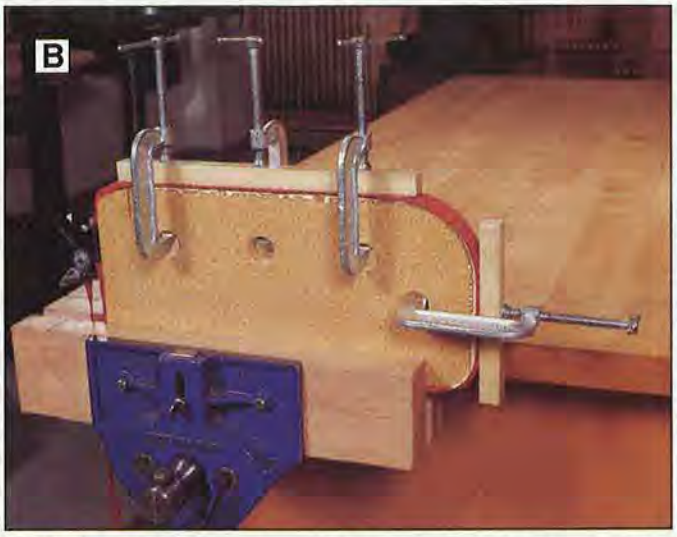



3/4 x 5 1/2 x 36" Cherry

*Plane or resaw to the thicknesses listed in the Bill of Materials.




Zero-clearance insert
Saw blade
Masking tape
Fence
Mark a pencil line 1/16" away from outside edge of saw blade.
1/16"
Align edge of stock with pencil line.
Saw blade path
Stock for runners (E) 3/4 x 4 x 20"
RIPPING THE STRIPS FOR THE RUNNERS




**Using the bending form and cauls, glue and clamp the thin strips together to form the runner lamination.**

**Use sandpaper adhered to a smooth flat surface to sand the bottom of the sleigh body flat.**

**4** Apply glue sparingly to the flattened bottom edge of the assembly (A, B, C), and clamp it to the base (D). Center the assembly side-to-side and 1/16" back from the cutout in the front of (D).

## Construct the bending form, and laminate the runners

**1** From ¾" plywood or particleboard, cut the bending form and two cauls to the sizes and shapes shown on the Runner Bending Form drawing.

**2** Drill four 1" holes in the bending form where shown. The holes are sized for the 3" C-clamps we used. Make any adjustments to the holes to fit your clamps. Mark the trim lines on the form where indicated on the drawing. So the glue won't stick to the forms and cauls, seal the pieces with a couple of coats of polyurethane.

**3** To form the runner lamination (enough for two runners), start with a piece of ¾"-thick stock 4" wide by at least 20" long. Fit your tablesaw with a zero-clearance insert. Place a piece of masking tape on your tablesaw top next to the blade, and mark a line parallel to the blade 1/16" away where shown on the drawing *above*. Align the outside edge of the board with the marked line, and cut a 1/16"-thick strip from the edge of the board. Repositioning the fence for each cut, cut four more 1/16×¾" strips to form the runner lamination.

**4** Secure the bending form in the bench vise, and loop a band clamp loosely around it. Position the ratchet mechanism on the clamp so that you can still tighten the band after you have clamped the first caul in place.

**5** Soak the five 1/16" strips in hot water for 15 minutes, and lay them out on spacers until the surface water has evaporated (about 10–15 minutes). Spread glue on one face of four of the strips, stack them together, and lay them on the bending form. Position the band clamp around the form and strips, and pull the slack out of the band clamp. Check the strips to make sure the edges are aligned and that the lamination extends no more than ½" beyond the rear trim mark on the form. Clamp the long caul in place. Tighten the band clamp with the ratchet mechanism, putting a considerable amount of tension on the clamp. Clamp the short caul in place where shown in *photo B*. Let the lamination sit overnight.

**6** Remove the clamps and runner lamination from the form. Scrape the glue off one side of the runner blank. Using the same sanding board used to sand the bottom of the sleigh body earlier, sand the scraped edge of the runner lamination smooth and flat.

**7** Reposition the runner lamination on the form, and transfer the trim lines to the runner. Trim the runner where marked.

*Continued*

# Vintage tabletop sleigh

**Using a bandsaw fitted with a ¼" regular 14-tooth-per-inch blade, rip the runner lamination down the center.**

**8** Make a copy of the full-sized runner front pattern from the pattern insert in the center of the magazine (use tracing paper if you've got it). Prop a piece of glass between two sawhorses, and position a light beneath the glass. Place the runner lamination on the glass over the light. Spray the full-sized pattern with spray adhesive, and align and adhere the pattern to the runner lamination as shown in *photo D.* Place the runner pattern side down, and cut away the excess paper with a utility knife. Use a drum sander to sand the curved ends of the runner lamination to the pattern lines.

**9** Set the fence on your bandsaw just a hair over 5/16" from the blade. Position the sanded edge of the runner lamination against the fence, and cut the lamination in half as shown in *photo C.* Using the sanding board, sand the cut edges of the runners (E).

**10** Using the same bandsaw setup used in Step 9, cut the remaining rough edge on the second runner.

## Complete the runner assembly, and glue on the top

**1** Install a 5/16" dado head in your tablesaw and raise the blade to cut ⅛" deep. Attach a wood fence to the miter gauge so it extends past the dado head to support the runners and avoid chipout. Cut dadoes on the inside face of each runner where shown on the Runner Bending Form drawing and on the Strut detail accompanying the Exploded View.

**2** Cut the struts (F) to size. Cut rabbets in the ends where shown on the Strut detail. Glue and clamp the struts into the dadoes in the runners (E). Finish-sand the strut and runner assemblies.

**3** Cut the supports (G) to size. Tilt the 5/16" dado head 14° from vertical, and adjust the blade height so the deep side of the cut it creates is 3/16" deep. See the Support detail accompanying the Exploded View for reference.

**4** Finish-sand the supports, then glue and clamp the ends of the struts into the angled dadoes in the supports, making sure that the struts are centered in the dadoes in the supports.

**5** Using a sanding block, sand a 14° bevel on the inside surface of each arm where shown on the Spindle detail.

**6** Spread glue on the tops of the supports (G). Clamp the body assembly (A, B, C, D) to the runner assembly (E, F, G). The supports should be centered side-to-side on the bottom of the base (D), and the curved front ends of the runners should be positioned between the beveled portion of the arms at the front ends of the base. Glue and clamp the runners to these arms.

**Using a homemade light box, verify the shape of the runner against the full-sized pattern above a bright light.**

**7** Using a portable drill with a 1/16" bit, drill a hole through the arms and runners where shown on the Spindle detail accompanying the Exploded View drawing. The holes should be centered top-to-bottom on the thickness of the arm and front-to-back on the thickness of the runner.

**8** Using the full-sized spindle (H) pattern, turn the spindle to shape. If you're not a turner, see the Buying Guide for our source of a preturned spindle. Clip the head off a #16×1¼" wire nail or brad, and chuck it into a portable drill. Carefully drill a pilot hole, centered in the end of the spindle.

**9** Sand the ends of the spindle to match the angle of the runners. Glue the spindle in place between the arms and runners, using #16×1" escutcheon pins tapped through the previously drilled holes in the runners and arms as guides to hold the spindle in place while the glue dries.

## An oil and polyurethane finish brings out the grain

**1** Sand a slight round-over on all edges not routed.

**2** To finish the sleigh we recommend several coats of Minwax Antique Oil or Deftoil to bring out the color. Let the finish dry for a couple of days and rub out any rough spots with an ultra-fine (gray) Scotch-Brite pad or 0000 steel wool. Finish with a coat of aerosol satin polyurethane.

For information on visiting Wyck, home to nine generations of one Quaker family, in the Germantown district of Philadelphia, Pennsylvania, call 215/848-1690 for details.

Written by Marlen Kemmet Illustrations: Kim Downing; Lorna Johnson Photographs: Hetherington Photography

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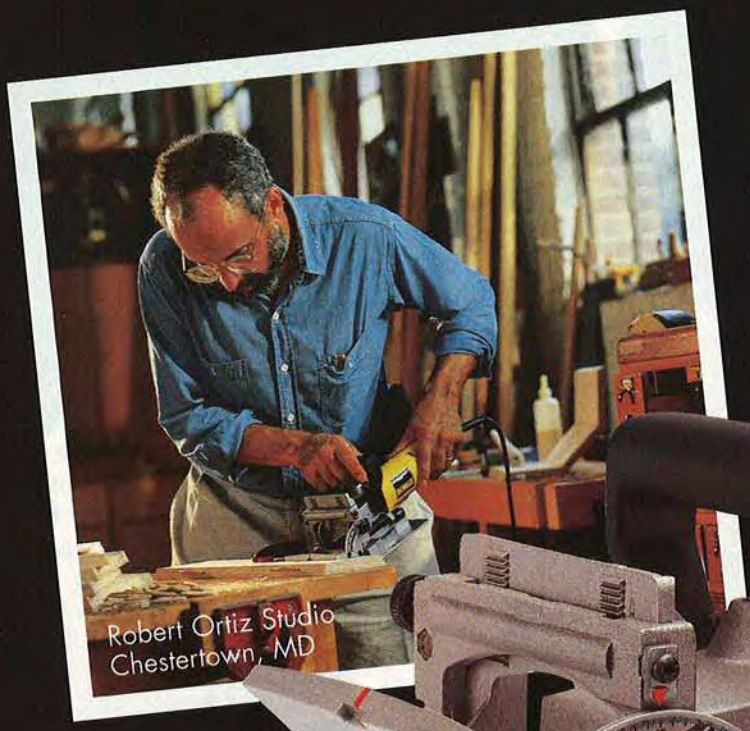


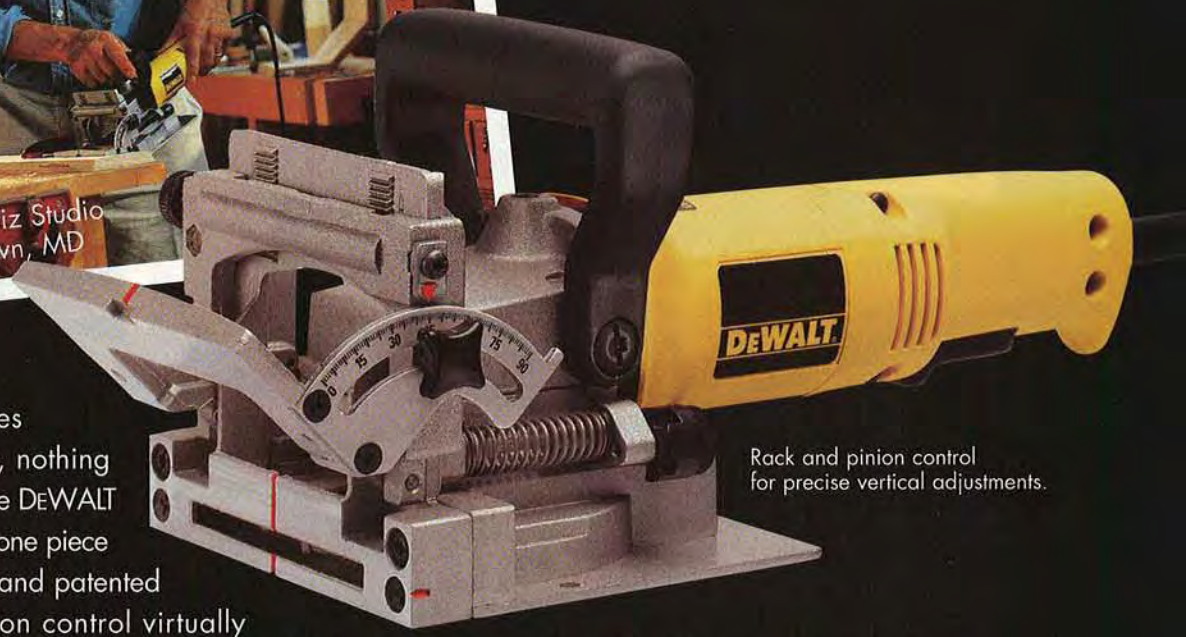


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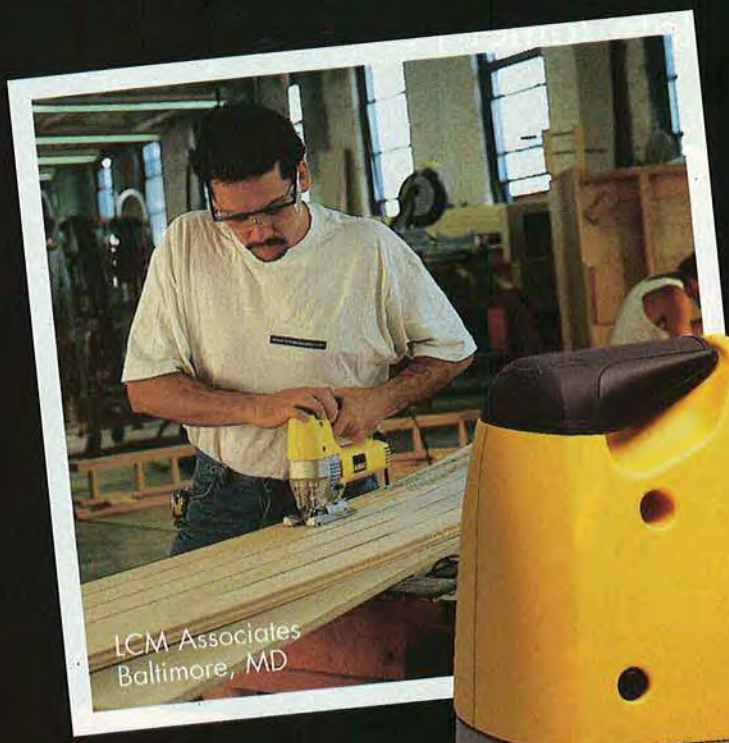


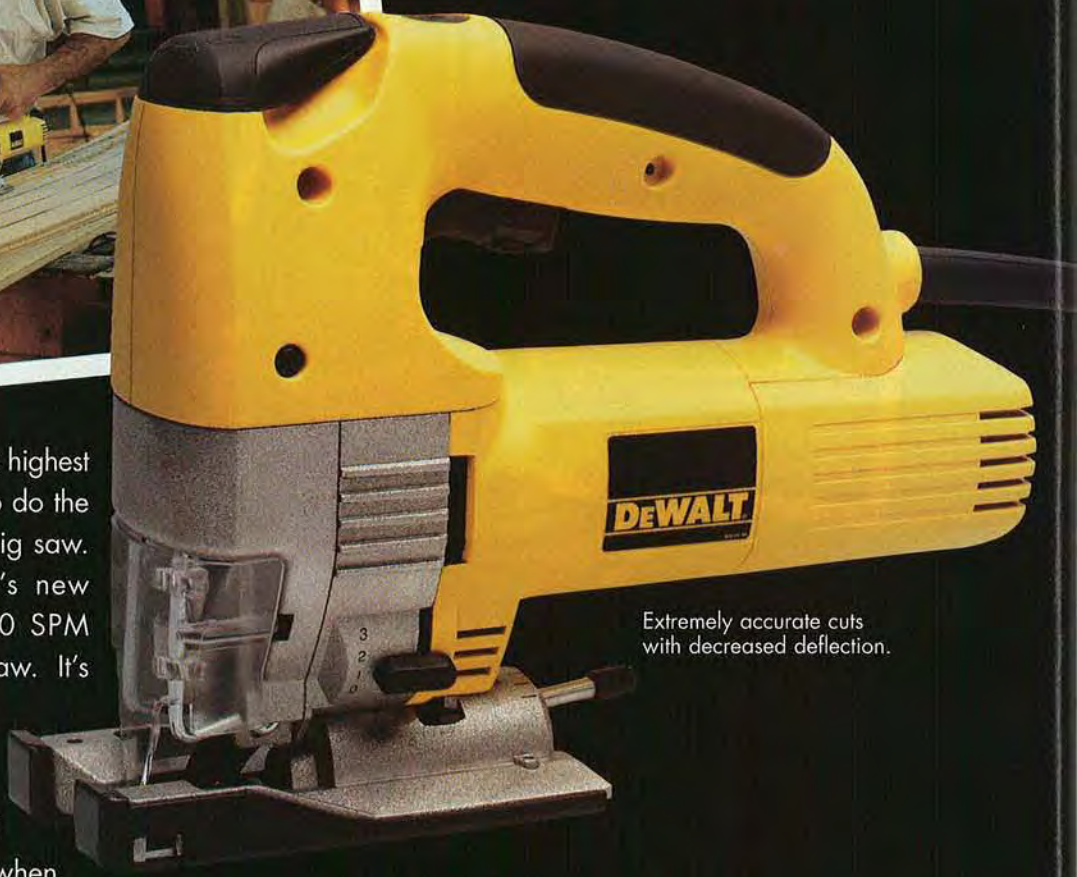


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Is your hobby turning into a business?

# Here's what you need to be legal

The first time you sell your work, things start to change. Not only does your woodworking become a business, but business laws suddenly apply to you.

Dealing with those laws can seem complex and bothersome. But it doesn't have to be daunting or confusing. Just heed the following basic advice and you'll be off to a fast, legal start.

### • Get a business license

Some states or localities require anyone who does business to obtain a license, usually for a nominal fee. Rules vary widely, but the folks at your local chamber of commerce should be able to steer you toward the right government office. Ask about a business start-up kit with the necessary forms for new businesses.

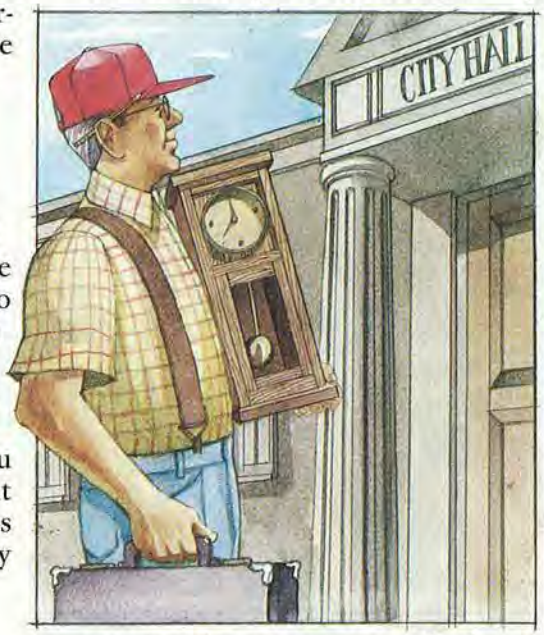
### • Don't forget a vendor's license, too

You're responsible for collecting sales taxes on everything you sell. But first you'll need a vendor's license from your state department of taxation or revenue.

Some woodworkers start out selling their work without charging sales taxes. But the longer you do, the greater your peril. State sales tax auditors are more numerous and aggressive than Internal Revenue Service auditors. And several states specifically target craft shows for enforcement. If you're caught not collecting sales tax, you'll have to dish up the past taxes—and possibly pay a fine.

### • Should you incorporate?

You don't have to incorporate unless you're concerned about legal liability or you want your business to provide health insurance. Even if you don't incorporate, it makes sense to use a business name that's registered with your state. This is called "fictitious name" registration. The secretary of state's office usually handles the legalities for both.




You also can apply for a trademark to exclusively use nationwide (U.S. Patent and Trademark Office at 703/308-9000, or 703/305-8747 for automated information). Registration costs a lot.

### • And how about federal and state taxes?

You owe federal, state, and local income taxes on the first dollar of profit you make. And you'll owe not only ordinary income taxes, but also "self-employment taxes" covering Social Security and Medicare contributions. (These can account for close to 15 percent of your income.)

You're responsible for paying quarterly estimated taxes, the equivalent of withholding for the self-employed. Failing to pay them will subject you to interest penalties and a big bill come tax time. You'll need Form 1040-ES from the Internal Revenue Service (call 800-TAX-FORM) and forms from your state or local government. Get professional help to set up a bookkeeping system.

### • Respect local zoning laws

The transition from hobbyist to professional is hardest here. In a residential zone, woodworking suddenly becomes "illegal" if you do it as a business. Getting a variance from local government to allow industrial activity in a residential zone is extremely difficult.

Fortunately, zoning is generally a no-harm, no-foul game. If your business doesn't annoy the neighbors, chances are you won't run afoul of the zoning inspector. So keep noises and disruptions, such as truck deliveries, to a minimum. If your business has grown so large and successful that you can't help but annoy the neighbors, it's time to move your shop.

*Written by Jack Neff, a Batavia, Ohio, business writer and author of* Make Your Woodworking Pay for Itself.

Illustration: Brian Jensen



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# Folk-Style Nativity Scene

## Simple figures capture the meaning of Christmas

**Here's a Nativity set that's sure to become a Christmas star for your family. And all it takes to build it is some sawing and simple carving.**

### Cut out the pieces

**1** Photocopy the eleven full-sized patterns from the *WOOD PATTERNS®* insert in the middle of the magazine. Separate the ones for 1" stock (A–C) from those that go onto 1½" material (D–K).

**2** Cut blanks to the dimensions called out on the patterns. (The sizes specified allow small margins around the patterns. If you prefer wider margins for sawing, cut larger blanks.) We sawed ours from basswood, except the one for the stable (I), which we cut from pine. We did this because we planned to watercolor the figures except for the stable, which would be clear-finished. For a different look, you could use a variety of hardwoods for the cutouts, and give the pieces a natural finish.

**3** Adhere the patterns to the stock, using rubber cement or spray adhesive. Apply the adhesive only to the back of the pattern. For easy pattern removal, follow the manufacturer's instructions for temporary bonding.

**4** Scrollsaw or bandsaw around the pattern outlines. For scrollsawing the thick stock, install a #9 blade (.053×.019" with 11½–14 teeth per inch) or heavier. For bandsawing, employ a ⅛" blade. Sand the sawn edges, as needed.

### Now, for a little carving

**1** Transfer the carving lines to the unpatterned side of each figure. You can draw the chamfer lines near the edges accurately

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enough by referring to the pattern and sketching freehand. For the triple lines that represent V-grooves on figures A, D, G, and H and the parallel lines defining the groove on figure D's head, refer to the end points for placement.

**2** Begin carving with the V-lines. You can carve these features with a V-tool, as shown *top right*, a knife, or power-carving tools. (We used a palm-handled ⅛" no. 12 bent V-tool.) With the V-tool, carve along the middle line to a depth that results in approximately the line width indicated.

**3** Next, chamfer the edges where indicated. You can carve the chamfers with a knife, as shown *bottom right*, or sand them.

**4** Carve a hollow about ⅛" deep between the lines on figure D's head. Blend the hollowed-out area into the sawn profile at the front and back of the head.

**5** Sand the figures, if you wish. (We left the tool marks on the carved chamfers to emphasize the handmade look.)

## Finish the figures

**1** Spray the stable (I) with a semi-gloss clear finish. Apply the finish of your choice to the figures. (We painted ours.)

**2** For painting, brush clean water onto the remaining figures, and allow to dry. Then, sand lightly with 220-grit sandpaper to remove the fuzzy grain raised by the water. (This step minimizes grain-raising later when you apply the water-based colors.)

**3** Thin titanium white acrylic artist color with enough water or acrylic medium to make a watery wash. Paint the sheep (B) with this whitewash.

**4** Color the rest of the figures with watercolors, acrylic colors thinned to transparent washes, or aniline dyes. For the figures shown, we used Dr. Martin's concentrated liquid watercolors, available at art-supply stores. The colors, shown on the patterns, are: cadmium (yellow), turquoise blue, violet, grass green, black, beige, and scarlet. Other watercolors would work, too.

**You can cut right through the paper pattern when carving the detail lines on the figures. Carve the lines quickly and easily with a sharp V-tool.**

**Carving the chamfers with a knife lends a folk-art look to the figures. For the chamfer at the neck, stop-cut along the bottom of the head, and carve up toward it.**

Photographs: John Hetherington; Dean Tanner  Illustrations: Roxanne LeMoine; Lorna Johnson

# SIMPLE SHOW-

## Build this Shaker-style quilt hanger

***Note:*** *We designed our Shaker-style quilt hanger to hold a 48" display quilt with a 2"-wide hanger pocket sewn along the top. But, you could fold a larger quilt and hang it over the bar, as shown in the photo.*

### Cut and rout some parts

**1** Cut the back (A) and top (B) to the sizes shown in the Bill of Materials. Set part B aside.

**2** Referring to the Parts View drawing, mark the locations for the two ½" holes on part A. Bore them ⅝" deep with a Forstner bit.

**3** In the center of each ½" hole, drill a 5/32" pilot hole through the back. On the back side, countersink the pilot holes for #8 flathead wood screws.

**4** Cut a piece of ¾" stock to the length and width shown for the upper molding (C). On the bottom edge, rout ½" round-overs on both ends and along one side.

**5** Set your tablesaw fence ½" from the blade. Then, with the routed face of the piece against the fence, resaw part C to ½" thick.

**6** Cut stock ⅜×1½×52½" for the lower molding (D). Chuck a 3/16" round-over bit in your table-mounted router. Install a fence on the router table, its face flush with the router bit's guide bearing. Then round over both ends and one edge on both sides of the piece. A miter gauge helps when routing the narrow ends, and pushsticks aid in edge routing.

### Assemble the back and shelf

**1** Lay the back on your bench, the ½" holes facing up. Center the top (B) and upper molding (C) along the top edge, flush with the back side. Clamp together.

**2** Lay out the hole locations on B shown by the Parts View drawing. Drill pilot holes and shank holes for #8×2" flathead wood screws, and countersink them.

**3** Unclamp the assembly. Apply glue, and reassemble parts A, B, and C with screws.

**4** Glue and clamp the lower molding (D) to the bottom edge of the back A. Center it, with the back edge flush with the back of A.

**5** Glue ⅞×3½" shaker pegs into the ½" holes in part A. Drill pilot holes from the backside, and secure the pegs with #8×1" flathead wood screws.

*Continued*

**Bill of Materials**

| Part | Finished Size T | W | L | Matl. | Qty. |
|---|---|---|---|---|---|
| A back | ¾" | 5½" | 52" | C | 1 |
| B top | ¾" | 3¼" | 64" | C | 1 |
| C upper molding | ½"* | 1¼" | 53" | C | 1 |
| D lower molding | ⅜" | 1"** | 52½" | C | 1 |
| E hanger bar | ½" | 2" | 56¼" | C | 1 |

*Initial thickness, ¾". **Initial width, 1½". Saw both parts to finished size in accordance with the how-to instructions.

**Materials Key:** C—cherry.

**Supplies:** ⅞×3½" Shaker pegs, #8×1" and #8×2" flathead wood screws, yellow woodworker's glue, finishing materials.

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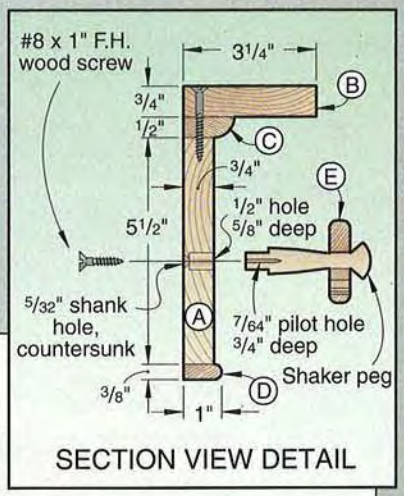


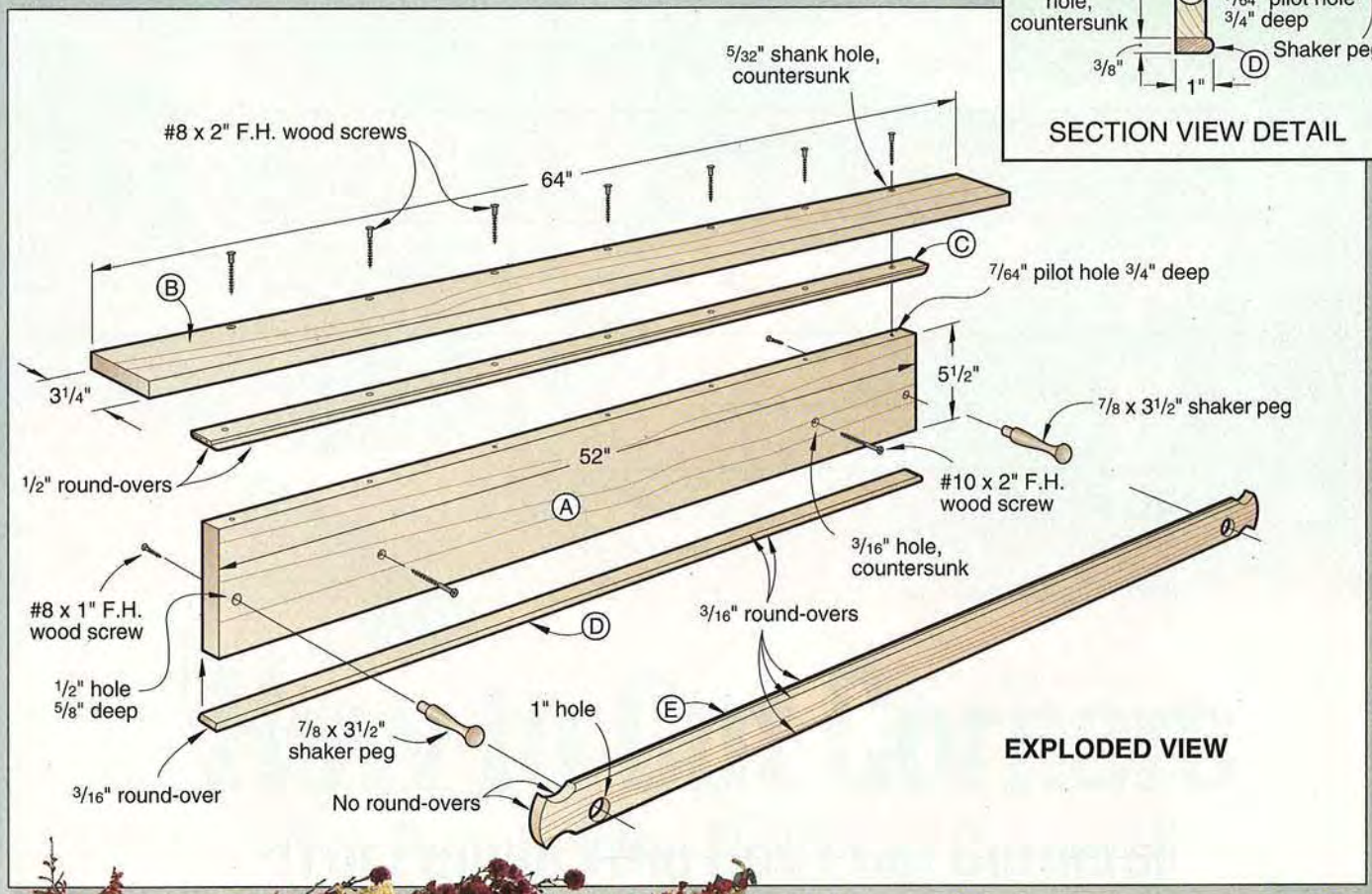

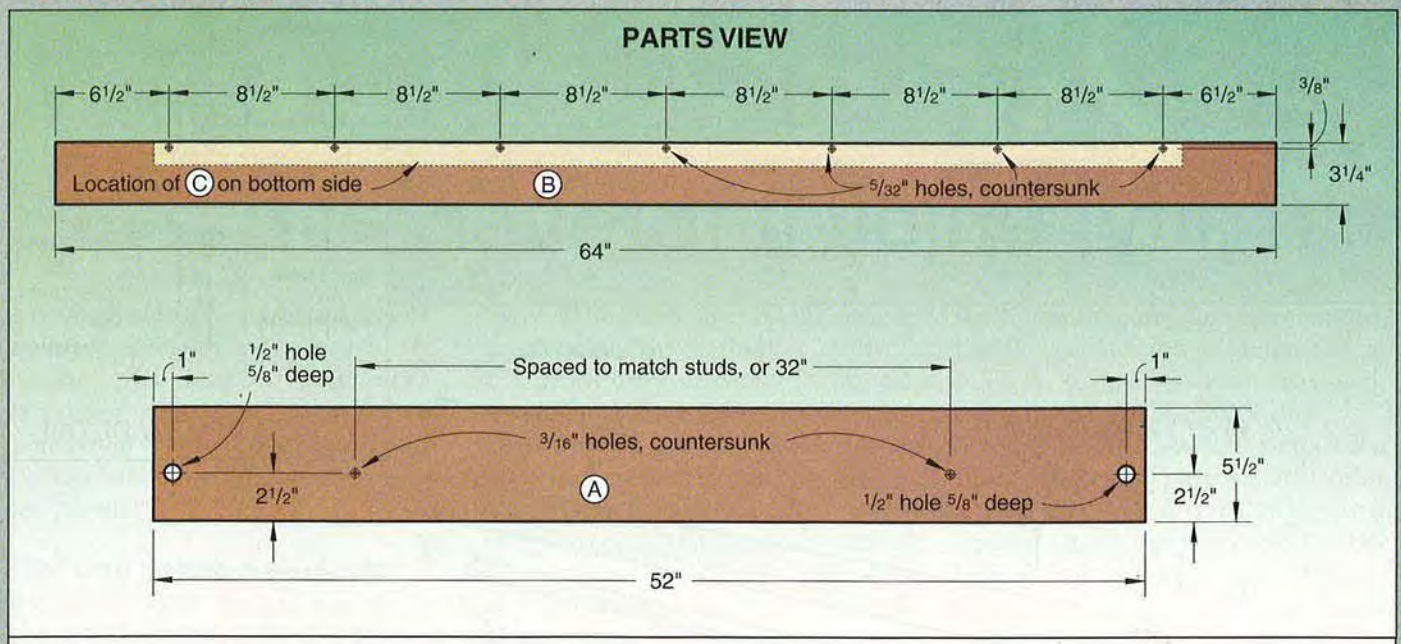


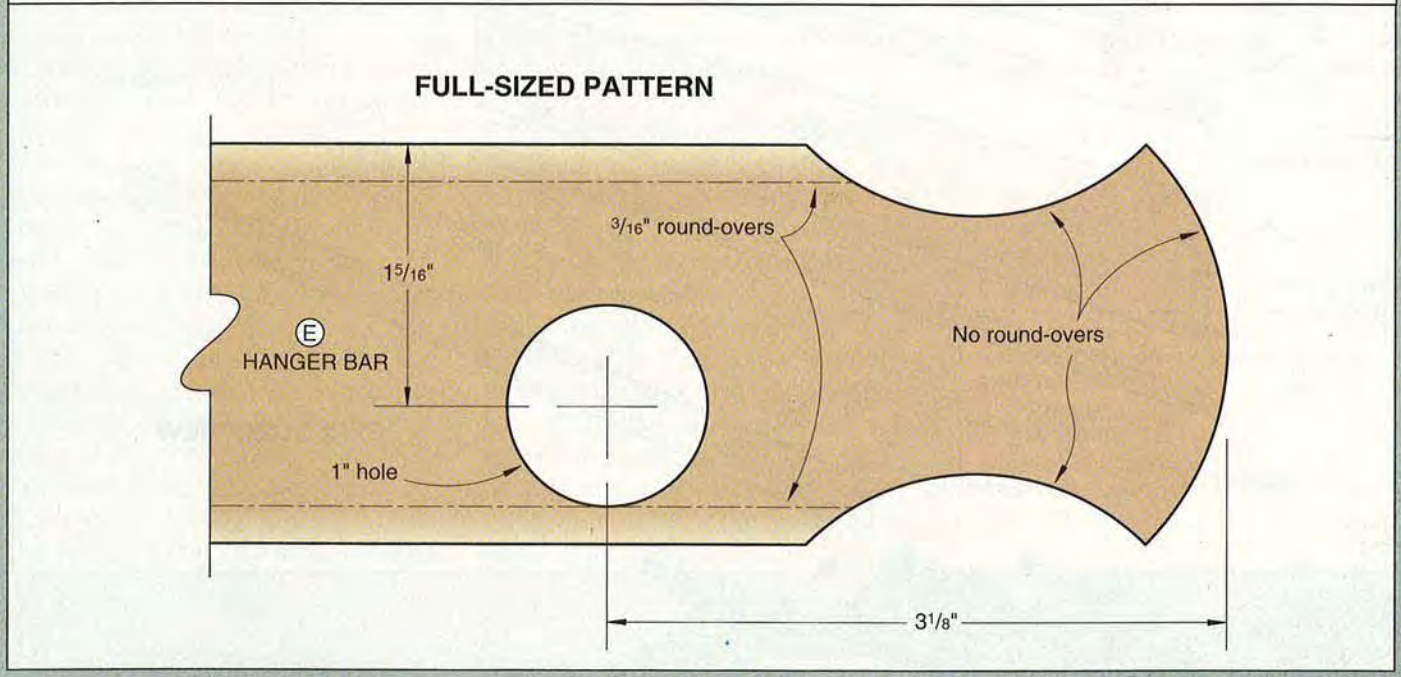


## Now, for the hanger bar

**1** Cut stock to the dimensions shown for the hanger bar (E).

**2** Referring to the Full-Sized Pattern, mark the location for the 1" hole at each end. Bore the holes, backing the stock with scrapwood to prevent chip-out.

**3** Transfer the Full-Sized pattern for the end profile to both ends of the bar. You could adhere copies of the pattern to the stock with rubber cement or spray adhesive, or trace it on. Scrollsaw or bandsaw the ends to shape.

**4** Set up your table-mounted router with a 3/16" round-over bit. Install a fence, as you did for routing the moldings. Rout both sides of the bar along both edges, stopping at the cutouts, where shown.

## Finish it, and hang it up

**1** Finish-sand the back-and-shelf assembly and the hanger bar. Apply a clear finish. (We finished our quilt hanger with Minwax clear Antique Oil.) Allow the finish to dry thoroughly.

**2** You can fasten the hanger to the wall with wall anchors or screws driven into wall studs, as appropriate. Mark the locations for the screw holes on the back (A). Drill and countersink 3/16" holes for #10 screws to go into studs or smaller ones to fit wall-anchor screws. Then attach the hanger to the wall.

Project Design: James R. Downing Illustrations: Kim Downing; Lorna Johnson Photograph: Marty Baldwin

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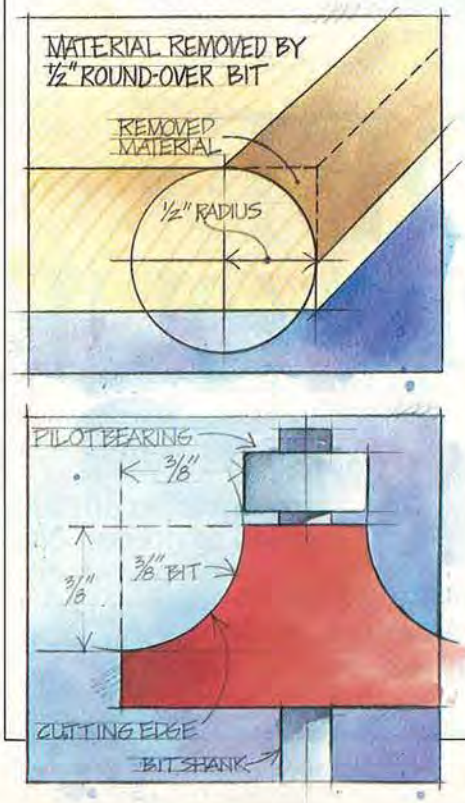
# Round-over bits

**Perhaps no profile bit sees more woodshop action than the round-over bit. Here are some basics on getting the most from this routing workhorse.**

## Match the bit to the project

Woodworking plans often specify that you round over an edge to a specific radius, say ½". Or, a plan may ask that you round over the edge with a certain bit, again say a ½" model. In either case, you need a bit that leaves an edge in the shape of a quarter-round with a ½" radius as shown *below*.

Manufacturers classify round-over bits according to the radius they cut. So, a "⅜" round-over bit" cuts a ⅜" radius, and so forth. To determine the radius of a round-over bit, measure either of the dimensions shown in the illustration *bottom*.



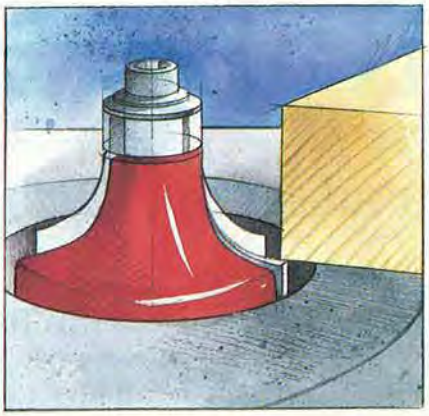

## The benefits of a rounded-over edge

Rounded edges give a project a softer, smoother look. The greater the radius of the round-over, the more pronounced this effect becomes.

Also, rounding an edge makes it more durable because it won't dent, splinter, or lose its finish as easily as a sharp corner. Like a knife that loses its sharp edge, a rounded corner is more "friendly" to people or other objects that come in contact with it.

## A few keys to setting up a round-over bit

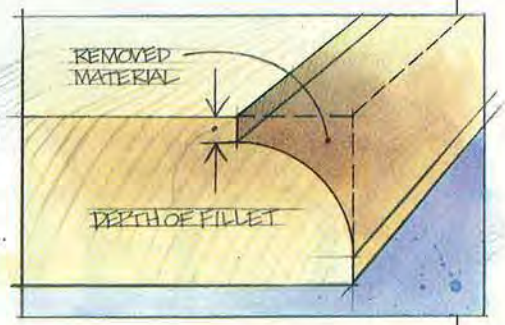
After mounting a round-over bit in a router, adjust the bit up or down so that the bottom of the concave cutting edge aligns flush with the router base or the surface of the router table. Use a flat block of wood as shown *below* to check your adjustment.

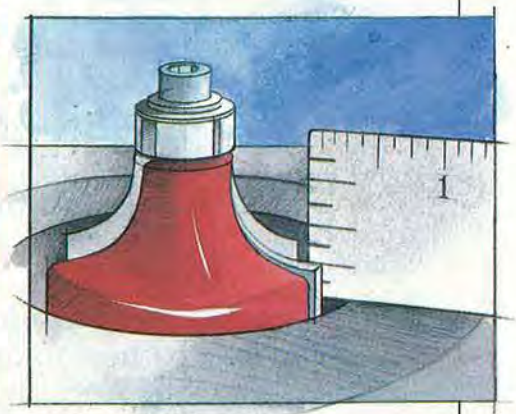


Before cutting your workpiece, test the cut on scrap stock. If the bit extends too far, it will cut a slight ridge into the workpiece surface. If the bit does not extend far enough it will cut an incomplete radius.

## How to cut a round-over with fillet

By extending the bit slightly, you can cut a round-over with fillet like the one *below*. Use a rule to precisely set the depth of the fillet as shown *bottom*.



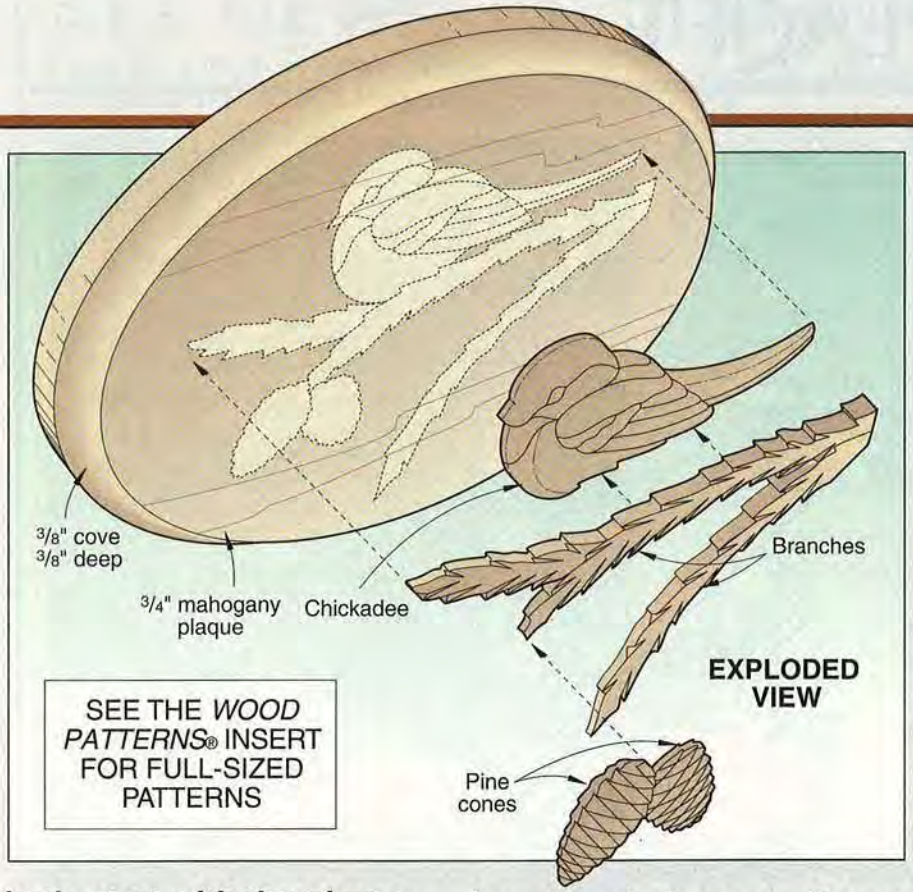



*Continued on page 100*

# CHICKADEE INTARSIA PLAQUE

From America's premier intarsia artist *Judy Gale Roberts*

**Capture a scene from nature by trying out this rewarding project. You'll learn how to mix and match a variety of contrasting hardwoods while working from our handy full-sized patterns.**



**Adhere the full-sized paper pattern to the top of the stacked lamination, and scrollsaw the pieces to shape.**

## Let's start with the plaque

**1** Make four photocopies of the full-sized Chickadee pattern on the *WOOD PATTERNS*® insert in the center of the magazine.

**2** Cut a piece of ¾" stock to 7×10" for the oval-shaped plaque (we used mahogany). Using spray adhesive, adhere one of the paper patterns to the front face of the blank. Scrollsaw or bandsaw the plaque to shape.

**3** Sand the edges of the plaque to the marked pattern line. Remove the paper pattern from the backboard. Rout a ⅜" cove ⅜" deep along its front edge where shown on the Exploded View drawing.

**4** Add a hanger, or drill an angled hole on the back side of the plaque for hanging. Sand the plaque smooth, hand-sanding the routed cove.

## Cut the chickadee and branch to shape

**1** Plane or resaw one piece each of cherry, maple, walnut, and oak to ¼" thick, and then cut to 5¼×7¼" for the chickadee, branch, and pine cones. Or, see the Buying Guide at the end of the article for our source of hardwood stock for this project.

**2** Temporarily join the four layers of ¼" hardwood stock face-to-face with double-faced tape.

**3** Using the second photocopy, trim the paper pattern to rough shape, cutting just outside the edge of the pattern. Using spray adhesive, adhere the pattern onto the top piece of stock where shown on the Stack Lamination drawing on the *next page*.

**4** Scrollsaw the parts to shape, starting with the bird's head and following with the rest of the body as shown in the photo *above right*. We used a #5 skip-tooth blade (12.5 teeth/inch). Then, cut the two pine cones and branches to shape.

***Note:*** *If your table has a large blade opening, use an auxiliary scrollsaw table with a zero-clearance blade hole to help you perform those small cuts. To make the table, cut a piece of ⅛" or ¼" plywood to cover your saw's tabletop. Center the plywood side-to-side on the table, in front of the blade. Saw into the plywood until the edge nearest you meets the front edge of the saw table. Secure the wooden auxiliary table to the metal scrollsaw table with double-faced tape.*

**5** Using the Key on the full-sized pattern, temporarily assemble the design on a flat surface using the third photocopied pattern as a guide. You'll have enough pieces for four separate projects by using other wood combinations than the one shown. Check the fit between the parts, and sand or trim as necessary.

## Now, contour-sand the pieces

**1** To give the pieces a more realistic look, we contour-sanded them. We found it easiest to adhere the smallest pieces to a block for ease when shaping. For the bird body, cut a piece of ¾" stock to 2½×3½". Place double-faced tape on one surface of the piece, and adhere the bird body pieces (minus the tail) to the block. Scrollsaw the ¾" stock about 1/16" outside the perimeter of the pieces. Now, using the remaining ¾" block as a handle, contour the

*Continued*

# INTARSIA PLAQUE

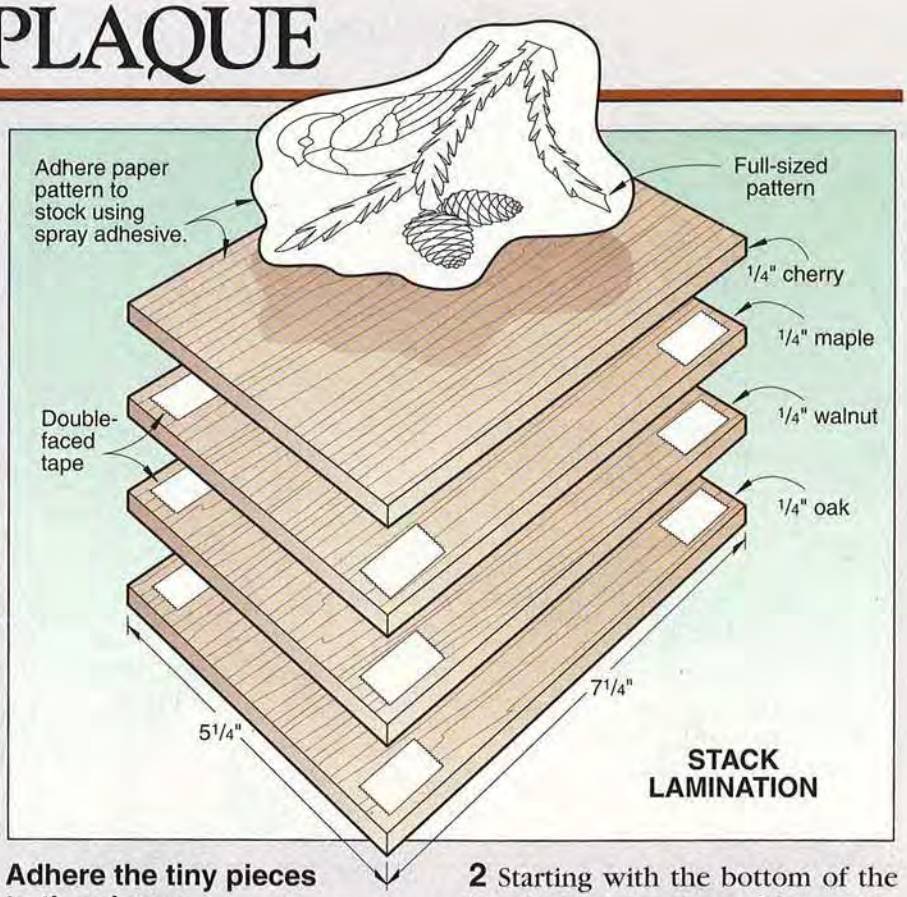
A 4"-long piece of 5/8" dowel stock makes a sturdy handle for filing and sanding the pine cones to shape.

pieces with a drum sander or disc sander (an inflatable sander works great if you have one). Sand the bird's body to the shape shown on the Chickadee cross section on the full-sized pattern and in the introductory photo. Now, sand the bird's tail to shape.

**2** Using double-faced tape, adhere a pine cone to the end of a 5/8" piece of dowel or a 5/8"-square block of wood 4" long.

**3** As shown in the photo *above*, clamp the dowel in a vise, and use a file (we used a 6" XX slim triangular taper file) to form a groove at each crossing line on each pine cone. (We found it helpful to use the thumb on our left hand to guide the file.) Keep the teeth on the file facing forward, making the cut by pushing away from your body. Don't drag the file on the backstroke; you're not cutting and this will just dull the file. If your filed grooves start to disappear when sanding, stop and refile to deepen the grooves before continuing to sand. Repeat for the second pine cone.

**4** Sand and file the branches to shape. (To support each branch, we secured it with double-faced tape to the edge of a piece of ½"-thick stock. Then, we clamped this into our woodworker's vise as shown in the photo *at right*. This held the piece steady while we did the filing and sanding as shown in the photo.)




## Adhere the tiny pieces to the plaque

**1** Carefully locate and glue the branches to the plaque, using the fourth pattern copy as a guide. Immediately wipe off any excess glue with a damp cloth. (To speed up the process, we used cyanoacrylate to glue the pieces in place. If you use regular woodworker's glue, you'll have to do just a few pieces at a time, weight them down until the glue dries, and then add a few more pieces.)

Use double-faced tape to secure a branch to the edge of ½" or ¾" stock to steady the piece when shaping.

**2** Starting with the bottom of the bird's body and working away from the branch, glue the chickadee pieces to the plaque. Add the bird's tail and pine cones.

**3** Use a toothbrush or compressed air to clean dust from the project. Spray on a couple light coats of finish. Do not apply too much finish at one time. Runs are unattractive and difficult to remove.

Written by Marlen Kemmet
Project Design: Judy Gale Roberts
Illustrations: Kim Downing; Lorna Johnson
Photographs: Hetherington Studio

### Buying Guide

**Hardwood kit.** Four pieces of ¾×7×10" mahogany; one piece each of ¼" cherry, maple, walnut, and oak cut to 5¼×7¼"; four full-sized patterns. Kit no. W102, $29.95 ppd. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537, or call 800/524-4184.

**Patterns.** For information about other Judy Gale Roberts patterns and projects, write to Roberts Studio, P.O. Box 4718, Sevierville, TN 37864.

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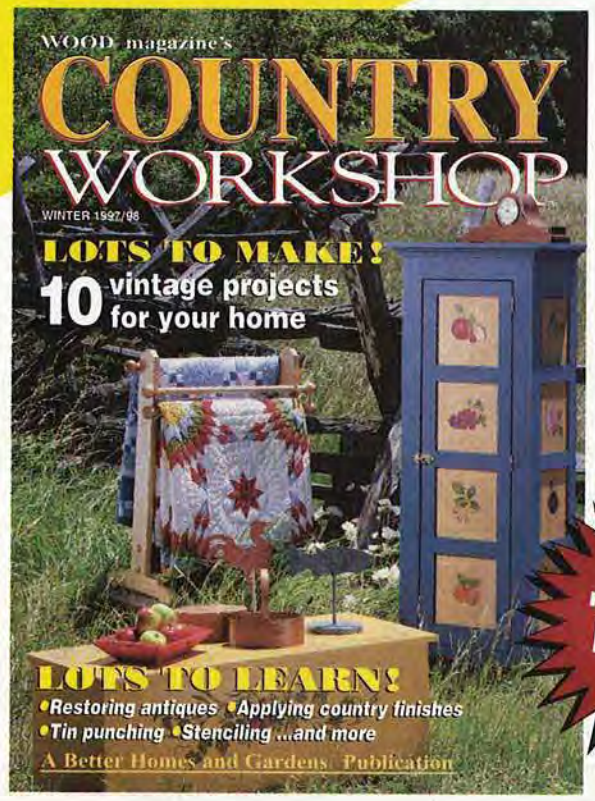


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# Portable Base

*Continued from page 57*

**4** Lay out the handle opening on each drawer front, shown in the Drawer Front drawing. Bandsaw or scrollsaw the handles.

**5** Assemble the drawers with glue. The rabbets will create gaps at the corners on the bottom. You can cut pieces of wood to fill them, if you wish.

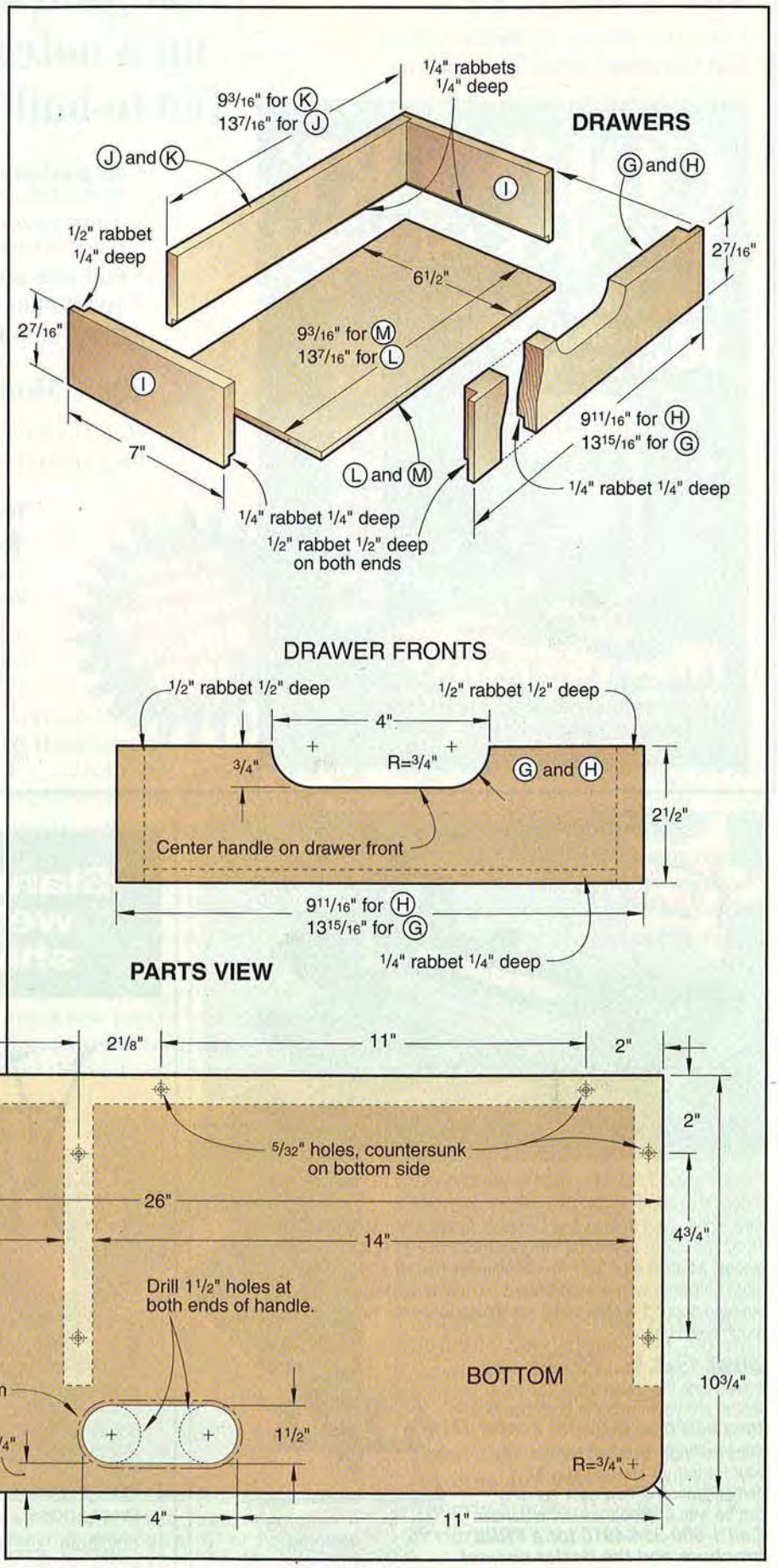
## Finish the base, and mount the lathe

**1** Sand the base and drawers, and apply a durable finish. (We used clear polyurethane.)

**2** After the finish dries, mount the lathe on top with suitable machine screws or bolts. If your lathe requires a separately mounted motor, build an appropriate L-shaped bracket, braced with triangular sides, and screw it to the back of the base.

**3** Slide the drawers into the openings. A piece of nonskid material under the base will help secure it during use, or you could clamp it to your bench.

Illustrations: Kim Downing, Lorna Johnson
Photograph: Hetherington Photography



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## 25" DUAL DRUM SANDER

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- CAST IRON WORK TABLE

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## 15" 3 H.P. PLANER

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- 3 KNIFE CUTTERHEAD
- ADJUSTABLE BED ROLLERS

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- 220 VOLTS
- 1182 CFM
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- 8" X 65" BED LENGTH

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## 6" JOINTER

- 1 H.P. 110/220 VOLT
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# Sanding Catalogue

Klingspor's Sanding Catalogue uses only Klingspor Abrasives industrial sanding products that are known throughout the furniture and woodworking industries as the premium products for sanding and finishing. These materials will outlast, outperform and outsand any other abrasive product in this business. **Check out these deals!**

## DISCS

**Priced in packages of 5.**

| Lightweight Paper, Hook & Loop | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 4½" / 8 holes | 100 & finer | $1.90 |
| | 80 Grit | $2.05 |
| | 60 Grit | $2.10 |
| | Assortment | $2.05 |
| 5" / 5 holes | 100 & finer | $2.05 |
| | 80 Grit | $2.20 |
| | 60 Grit | $2.30 |
| | Assortment | $2.20 |
| 5" / 8 holes | 100 & finer | $2.05 |
| | 80 Grit | $2.20 |
| | 60 Grit | $2.30 |
| | Assortment | $2.20 |
| 6" / 6 holes | 100 & finer | $3.00 |
| | 80 Grit | $3.15 |
| | 60 Grit | $3.35 |
| | Assortment | $3.15 |
| 6" / 8 holes | 100 & finer | $3.00 |
| | 80 Grit | $3.15 |
| | 60 Grit | $3.35 |
| | Assortment | $3.15 |
| 6" /16 holes | 100 & finer | $3.00 |
| | 80 Grit | $3.15 |
| | 60 Grit | $3.35 |
| | Assortment | $3.15 |

| Stearate Hook & Loop | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 4½" / 8 holes | 100 & finer | $1.60 |
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| 5" / 5 holes | 100 & finer | $1.60 |
| | 80 Grit | $1.65 |
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| | Assortment | $1.65 |
| 5" / 8 holes | 100 & finer | $1.60 |
| | 80 Grit | $1.65 |
| | 60 Grit | $1.75 |
| | Assortment | $1.65 |
| 6" / 6 holes | 100 & finer | $2.25 |
| | 80 Grit | $2.35 |
| | 60 Grit | $2.50 |
| | Assortment | $2.35 |
| 6" / 8 holes | 100 & finer | $2.25 |
| | 80 Grit | $2.35 |
| | 60 Grit | $2.50 |
| | Assortment | $2.35 |
| 6" / 16 holes | 100 & finer | $2.25 |
| | 80 Grit | $2.35 |
| | 60 Grit | $2.50 |
| | Assortment | $2.35 |

| Heavy E-weight paper, Hook & Loop | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
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| | 80 Grit | $3.00 |
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| | Assortment | $3.00 |
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| | 80 Grit | $3.00 |
| | 60 Grit | $3.35 |
| | Assortment | $3.00 |
| 5" / 8 holes | 100 & finer | $2.75 |
| | 80 Grit | $3.00 |
| | 60 Grit | $3.35 |
| | Assortment | $3.00 |
| 6" / 6 holes | 100 & finer | $3.90 |
| | 80 Grit | $4.50 |
| | 60 Grit | $4.95 |
| | Assortment | $4.50 |
| 6" / 8 holes | 100 & finer | $3.90 |
| | 80 Grit | $4.50 |
| | 60 Grit | $4.95 |
| | Assortment | $4.50 |
| 6" / 16 holes | 100 & finer | $3.90 |
| | 80 Grit | $4.50 |
| | 60 Grit | $4.95 |
| | Assortment | $4.50 |

| Cloth PSA Discs | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 5" | 100 & finer | $3.25 |
| | 80 Grit | $3.40 |
| | 60 Grit | $3.55 |
| | 50 Grit | $3.75 |
| | 40 Grit | $3.95 |
| | 36 Grit | $4.15 |
| 6" | 100 & finer | $4.65 |
| | 80 Grit | $4.90 |
| | 60 Grit | $5.20 |
| | 50 Grit | $5.55 |
| | 40 Grit | $5.85 |
| | 36 Grit | $6.20 |

| Paper PSA Discs | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 5" | 100 & finer | $1.05 |
| | 80 Grit | $1.05 |
| | 60 Grit | $1.15 |
| 6" | 100 & finer | $1.30 |
| | 80 Grit | $1.35 |
| | 60 Grit | $1.45 |

**Assortments include one each of 60, 80, 120, 150 & 180 grit.**

## SHEETS

**Priced in packages of 5.**

| Silicon Carbide Wet/Dry Sheets | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 9" x 11 | 220 & Finer | $2.40 |
| | 180 Grit | $2.60 |
| | 150 Grit | $2.75 |
| | 120 Grit | $2.95 |
| | 100 Grit | $3.40 |
| | 80 Grit | $3.90 |
| 4½" x 5½" | 220 & Finer | $0.70 |
| | 180 Grit | $0.80 |
| | 150 Grit | $0.85 |
| | 120 Grit | $0.90 |
| | 100 Grit | $1.00 |
| | 80 Grit | $1.15 |
| 3⅔" x 9" | 220 & Finer | $0.95 |
| | 180 Grit | $1.05 |
| | 150 Grit | $1.10 |
| | 120 Grit | $1.20 |
| | 100 Grit | $1.35 |
| | 80 Grit | $1.55 |

| Aluminum Oxide Cloth | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 9" x 11 | 100 & Finer | $4.90 |
| | 80 Grit | $5.25 |
| | 60 Grit | $6.35 |
| | 50 Grit | $6.80 |
| | 40 Grit | $7.30 |
| 4½" x 5½" | 100 & Finer | $1.45 |
| | 80 Grit | $1.55 |
| | 60 Grit | $1.90 |
| | 50 Grit | $2.00 |
| | 40 Grit | $2.15 |
| 3⅔" x 9" | 100 & Finer | $1.95 |
| | 80 Grit | $2.10 |
| | 60 Grit | $2.50 |
| | 50 Grit | $2.70 |
| | 40 Grit | $2.90 |

| Aluminum Oxide Paper | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 9" x 11 | 100 & Finer | $1.75 |
| | 80 Grit | $1.75 |
| | 60 Grit | $2.00 |
| 4½" x 5½" | 100 & Finer | $0.45 |
| | 80 Grit | $0.55 |
| | 60 Grit | $0.60 |
| 3⅔" x 9" | 100 & Finer | $0.65 |
| | 80 Grit | $0.70 |
| | 60 Grit | $0.75 |

| Stearate | | |
|---|---|---|
| **Size** | **Grit** | **Price** |
| 9" x 11 | 100 & Finer | $2.17 |
| | 80 Grit | $2.50 |
| | 60 Grit | $2.80 |
| 4½" x 5½" | 100 & Finer | $0.63 |
| | 80 Grit | $0.70 |
| | 60 Grit | $0.84 |
| 3⅔" x 9" | 100 & Finer | $0.84 |
| | 80 Grit | $0.98 |
| | 60 Grit | $1.12 |

## $29 BOX OF BELTS

You'll receive 36 Industrial Sanding Belts. That's only $.80 per belt! Six grit packs each containing 6 belts. (4" belt packs contain 5 belts.)

**Choose a Size:**
2½" x 16", 3" x 18", 3" x 21", 3" x 24", 4" x 21" **or** 4" x 24"

**You'll Get:**
**1 Pack:** X Coarse (36-40 Grit), **1 Pack:** Coarse (50-60 Grit), **1 Pack:** Medium (80-100 Grit), **1 Pack:** Med/Fine (120-150 Grit), **1 Pack:** Fine (180-220-240 Grit), **&1 Pack:** X Fine (280-320 Grit)

## ONLY $19.95 10 POUND BARGAIN BOX

This is not your typical "grab bag" offer - what you get is all useable. No trash involved. You get 10 pounds of an equal amount of coarse, medium & fine grit sandpaper pieces. Each piece is of a usable size and is first quality sanding product.

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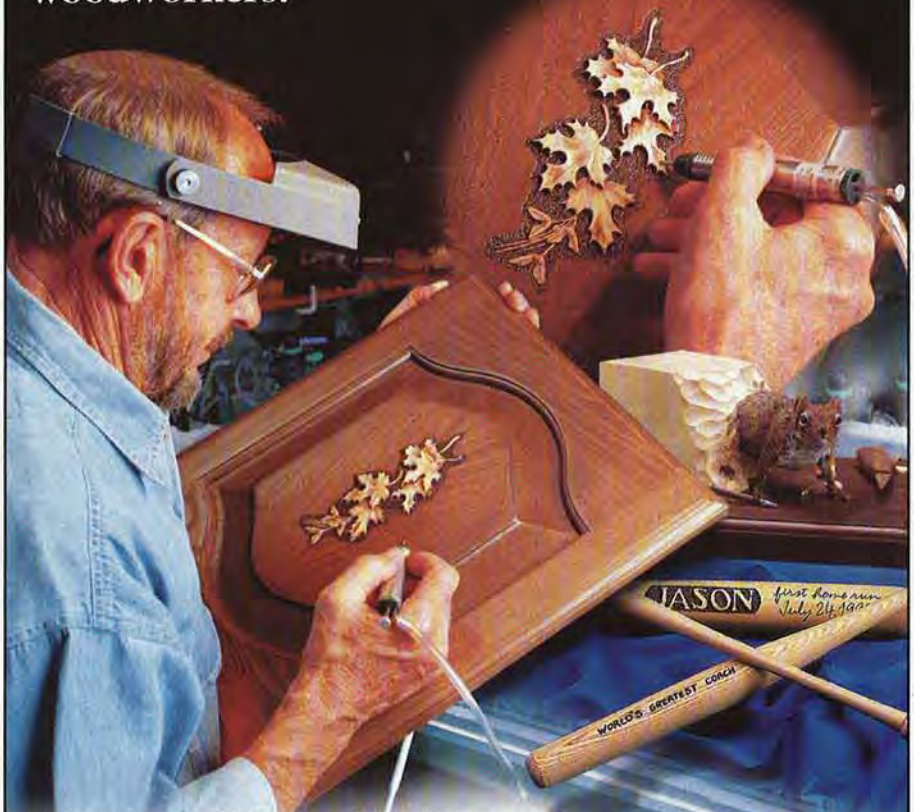


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ROUTER BIT REVIEW

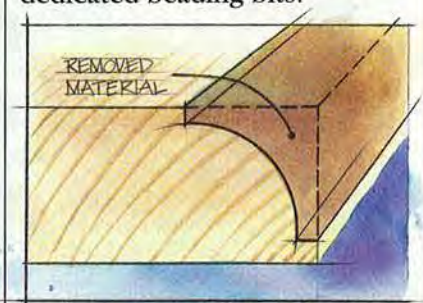
# Round-over bits

*Continued from page 91*

## Convert a round-over bit into a beading bit

By simply changing to a smaller pilot bearing, you can make a round-over bit cut a beaded edge like the one *below.*

To change bearings you simply loosen the setscrew atop the bearing with a hex wrench as shown *below middle.* A few bearings cost a lot less than dedicated beading bits!



## A few pointers on buying round-over bits

You can purchase round-over bits with radii that range from 1/16" to 1¼". In the *WOOD®* magazine shop we make the greatest use of round-over bits with these radii: 1/16" (for "breaking" edges that need to look crisp and sharp, but feel smooth to the touch), ⅛", ¼", ⅜", and ½". We recommend that you purchase any round-over bit with a ½" shank if it has a ⅜"-or- larger radius.

Written by Bill Krier with Chuck Hedlund
Illustrations: Brian Jensen
Photograph: John Hetherington

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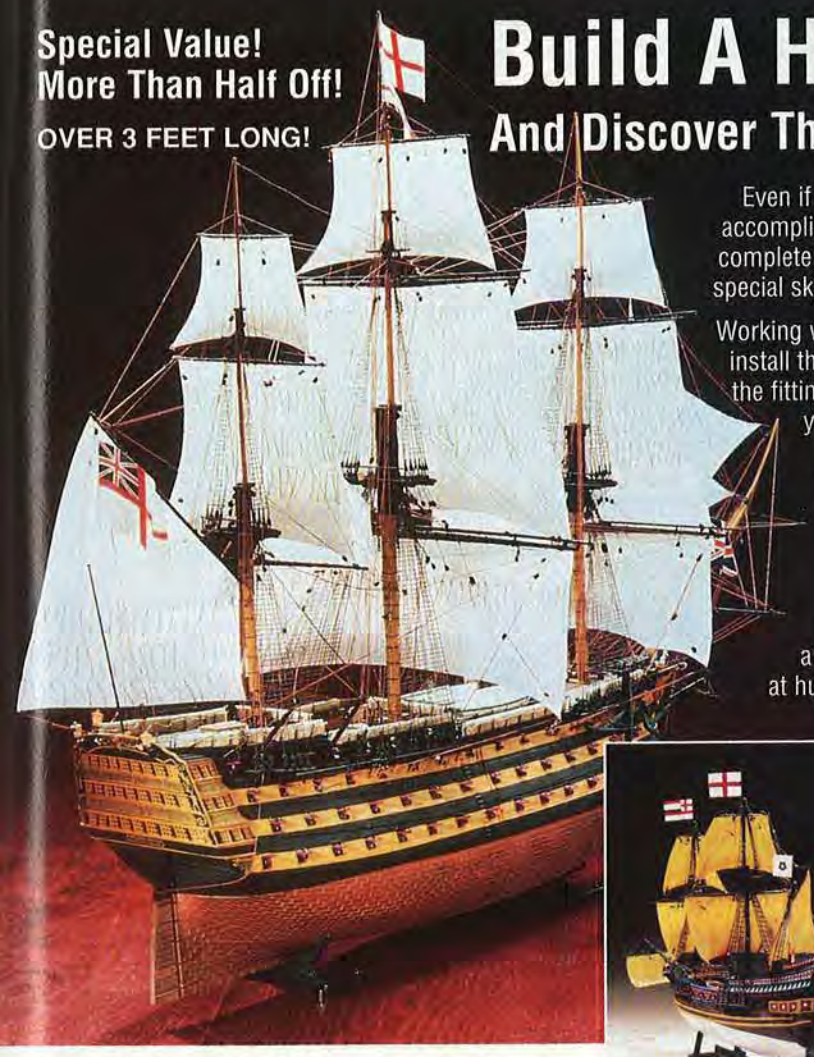
# Build A Historic Ship Model

## And Discover The World's Most Satisfying Hobby!



Even if you've never built a model before, you can experience the pride of accomplishment ship modeling offers. It's easy to build an accurate replica, complete with authentically scaled fittings and delicate rigging. You need no special skills– just a bit of patience, a few basic tools, some paints and glue.

Working with finely detailed plastic parts, you'll assemble the hull, paint and install the deck furnishings. You'll add the helm and bowsprit, and position the fittings. Finally, you'll set the masts and rig the lines. When completed, you'll proudly display a beautiful ship model– lifelike in every detail.

## Half Price Introductory Offer On Heller Kits!

World famous for their accurate detail and exacting authenticity, ship model kits by Heller are the best available. Each kit is complete with up to thousands of finely molded plastic parts. Illustrated instruction books make assembly simple and fast. Now, for a limited time only, we're offering some of the most popular models at huge savings. Try a Heller kit today– we guarantee you'll be pleased!

**H.M.S. VICTORY**/Kit No. HEL80897B
The *H.M.S. Victory* by Heller is regarded as the best plastic ship model ever made. Perfectly scaled and precisely molded, the model is authentic down to the wood grain texture of the hull timbers. Kit contains over 2,100 parts, 300 yards of rigging line in four diameters, display base, 20 pages of plans and step-by-step instructions.

Length 40-1/2"/Height 28"/Scale 1:100/Parts 2,107
Mfg. List $229.95 **Sale $99.99**

**H.M.S. Victory Paint Set**
Set of 17 Humbrol Model Paints includes 3 copper; 2 each trainer yellow, brown yellow, and chocolate; 1 each blue, white, scarlet, brick red, middle blue, green, black and gold.
No. HUM999VP Value $21.93 **Sale $15.50**

**GOLDEN HIND**/Kit No. HEL80829B
Length 14"/Height 11-1/2"
Scale 1:200/Parts 369
List $34.95 **Sale $16.99**

**Golden Hind Paint Set**
Set of six Humbrol Model Paints includes 1 each trainer yellow, blue, white, leather, sand and cream.
No. HUM829GHP
Value $7.74 **Sale $5.90**

**FLYING CLOUD**/Kit No. HEL80830B
Length 14-1/4"/Height 9-3/4"
Scale 1:200/Parts 126
List $29.95 **Sale $14.99**

**Flying Cloud Paint Set**
Set of 10 Humbrol Model Paints includes 2 black, 1 each white, sand, light gray, chocolate, army green, cream, gold, bronze and lemon.
No. HUM830GHP
Value $12.90 **Sale $10.50**



**H.M.S. BOUNTY**/Kit No. HEL80850B
Length 18"/Height 15"
Scale 1:87/Parts 99
Mfg. List $39.95 **Sale $19.99**

**H.M.S. Bounty Paint Set**
Set of 9 Humbrol Model Paints includes 1 each blue, white, scarlet, grass green, lemon, black, leather, cream and copper.
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**SHIP MODELER'S TOOL SET**
Hobby knife, 10 cutting and carving blades, sandpaper assortment, tweezers, three miniature files, block threader and jeweler's pin vise with three fine diameter drills– 26 pieces in all!
No. MS102
Value Over $22.00 **Sale $14.99**

**RIGGING LINE ASSORTMENT**
Three diameters rigging line, 210 feet total. Needed for all kits, except the H.M.S. Victory.
No. HEL18007 **Price $4.99**

**BRUSH SET**
Set of five high quality brushes with lacquered wooden handles contains: three sable rounds (size 3/0, 3, 5), sable shader (size 4) and camel hair wash (size 5/8").
No. LC436J
Mfg. List $5.95
**Sale $3.99**

**FLUSH CUTTER**
Cuts the most delicate pieces off plastic parts trees without damage! Light touch spring returns the cutter to its open position after each use. 5" long with hardened cutting edge, cushioned grip handle.
No. JP12A
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Quick bonding glue with medium viscosity offers good gap-filling capacity and a strong bond. 1/2 oz.
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Print this article

## EconoStop flips down when you need it

Stopblocks greatly improve your precision when you need to machine or cut several identical pieces. I especially like this adjustable stop because it folds out of the way for rough cuts, then flips down for finish cuts.

The Fast Trak EconoStop consists of a 6" length of aluminum T-track and an aluminum Drop Stop. The T-track mounts to a ¾×2⅜" board of any length that you use as an auxiliary extension on your tablesaw miter gauge, router-table fence, or anywhere you need to use a stopblock.

I found the EconoStop easy to set up and use. The track fits on top of the board and slides along a rabbet and groove that you cut in the board's face. You roughly position the stop by moving the track along the groove in the board. Then, with the track locked down on the board, you fine-tune the Drop Stop's position by sliding it in the T-track.

The makers of the EconoStop carry a complete system of interchangeable fence accessories, including a stopblock with a microadjustment screw and an extruded aluminum miter-gauge face. While these higher-priced attachments provide some added convenience, the EconoStop performs the same basic task for much less money.

*—Tested by Dave Henderson*

**PRODUCT SCORECARD**

Fast Trak EconoStop

| | |
|---|---|
| Performance | ★ ★ ★ ★ ☆ |
| Price | $29.99 |
| Value | ★ ★ ★ ★ ☆ |

Woodhaven, 501 W. 1st Ave., Durant, IA 52747. Call 800/344-6657.

## HorsePower Clamp proves itself a mighty handy workshop addition

Just when you thought there couldn't possibly be another clamping tool, the folks at American Tool introduced the HorsePower Handy Clamp. Part pipe clamp and part vise, this innovative tool lives up to its useful name.

Designed to fit on ¾" black pipe, the HorsePower Handy Clamp has a lever-operated, cam-action head that screws onto the threaded end of the pipe. The other jaw slides into position along the pipe. When you apply clamping pressure, this jaw racks slightly and firmly grips the pipe.

The clamp comes with two steel L-brackets that you screw or bolt to a sawhorse, workbench, or other flat surface. The pipe slides through a hole in one bracket, and the head snaps into a slot on the other bracket. Because the clamp can rotate in the brackets, the jaws adjust to a variety of positions, as shown *lower left.*

The jaws held my workpieces securely while I sawed, sanded, and routed boards. Used without the brackets, the HorsePower Handy Clamp becomes the fastest pipe clamp I've used—you slide the adjustable jaw into position, then flip the cam lever.

*—Tested by Bob McFarlin*

**PRODUCT SCORECARD**

HorsePower Handy Clamp

| | |
|---|---|
| Performance | ★ ★ ★ ★ ★ |
| Price | $19.95 |
| Value | ★ ★ ★ ★ ★ |

American Tool Companies, 8400 Lakeview Pkwy., Suite 400, Kenosha, WI 53142. Call 414/947-2440.

*Continued on page 112*

# JESADA TOOLS™

## "The smoothest and sharpest we've ever seen"

. . . *American Woodworker Magazine*

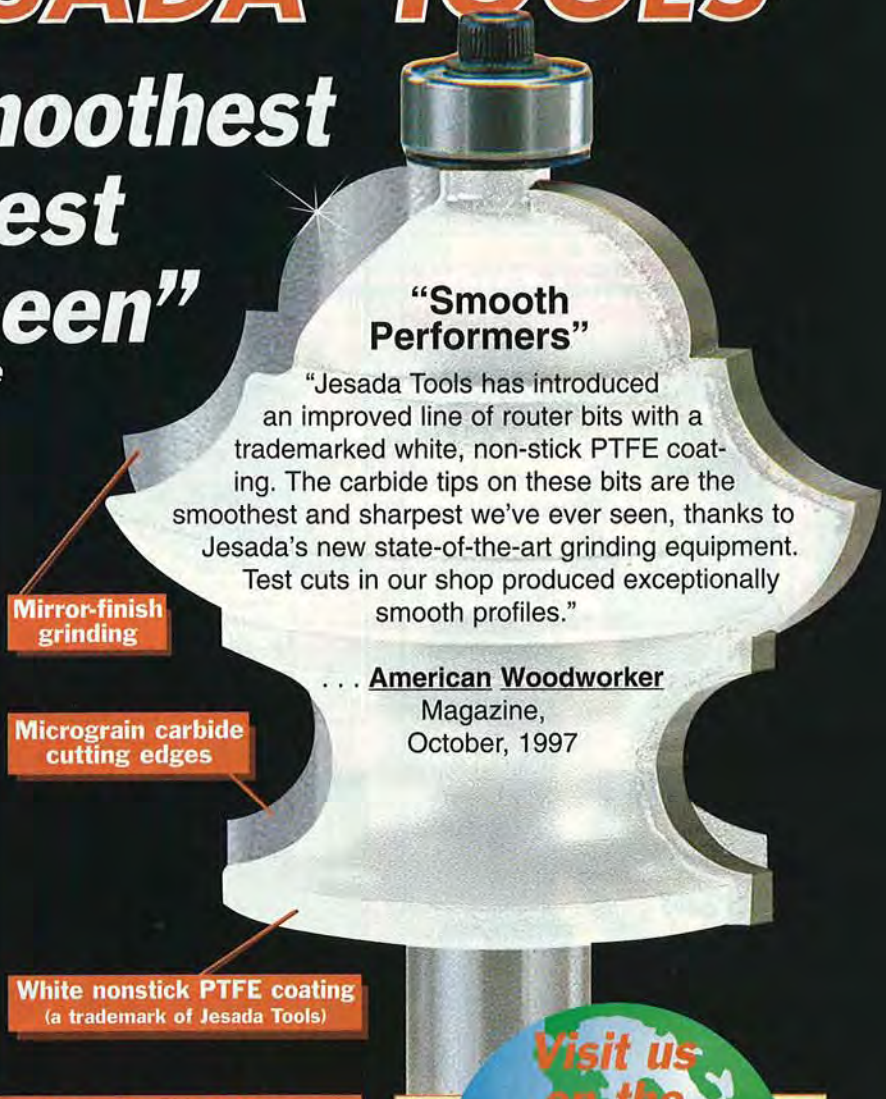
**Here's what author and router expert Patrick Spielman had to say about Jesada bits:**

"Jesada has recently introduced some new bits I designed and I am especially pleased to inform you that I have never seen better quality router bits produced anywhere, ever! Made entirely and shipped directly from their Florida factory, the new Jesada bits have the sharpest, longest-lasting carbide with the highest polish finish in the industry. Producing these unmatched bits is largely due to Jesada's new 5-axis computerized grinding centers. This, and their company's commitment to excellence driven by CEO Carlo Venditto, guarantees the same superb customer service and the best bits in the world!

Look for Jesada's new white (PTFE) coated router bits . . . If you've never tried their bits, I strongly recommend that you do."

. . . *from Patrick Spielman's Home Workshop News, Vol. II, issue 9, © Spielman Publishing Co.*

Patrick is the author of more than 50 woodworking books and is the editor of Home Workshop News, a bi-monthly magazine.



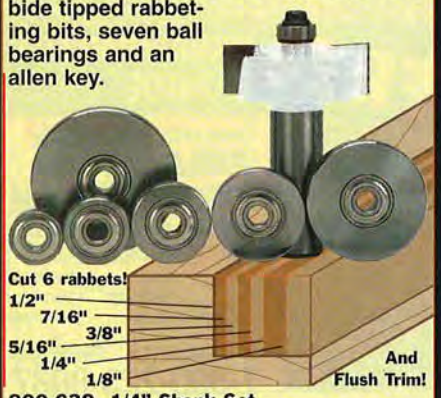

### "Smooth Performers"

"Jesada Tools has introduced an improved line of router bits with a trademarked white, non-stick PTFE coating. The carbide tips on these bits are the smoothest and sharpest we've ever seen, thanks to Jesada's new state-of-the-art grinding equipment. Test cuts in our shop produced exceptionally smooth profiles."

. . . **American Woodworker** Magazine, October, 1997

## Rabbet-Master Plus™ masters 7 different cuts

Jesada Tools' Rabbet-Master Plus cuts rabbets from 1/8" to 1/2" deep & flush trims as well! The set includes one of our 1-3/8"-diameter carbide tipped rabbeting bits, seven ball bearings and an allen key.




**800-639 1/4" Shank Set,**
**List: $49.40.....SALE: $38.90**

**800-640 1/2" Shank Set,**
**List: $54.40.....SALE: $39.90**

## Try Jesada and Save with our 3-Bit Special

This special introductory offer lets you experience JESADA TOOLS' quality first hand! You'll get 3 bits from our state-of-the-art U.S. factory with features like Fatigue-Proof® steel, micrograin carbide and our mirror-finish grinding, all for about half our regular price!

**800-701 3-bit set, 1/4" Shank,**
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**800-702 3-bit set, 1/2" Shank,**
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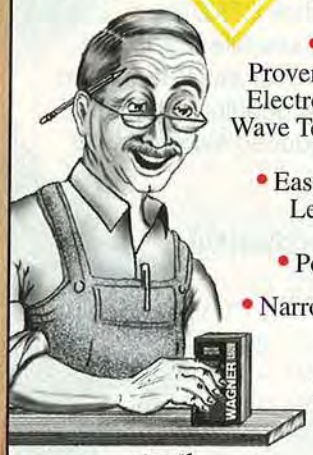

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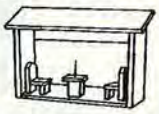

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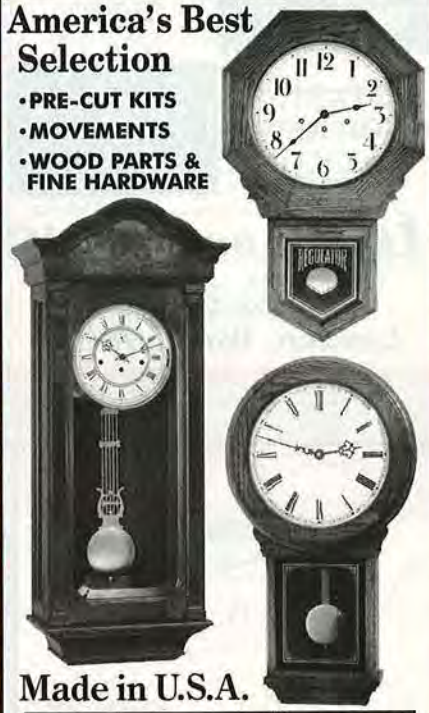

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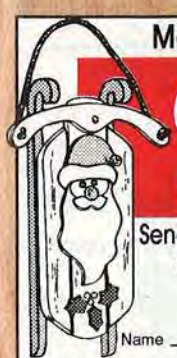

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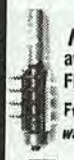

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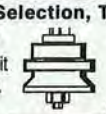

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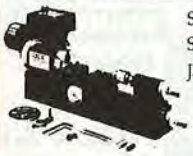

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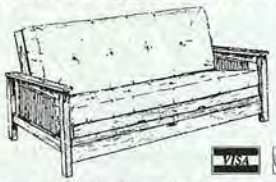

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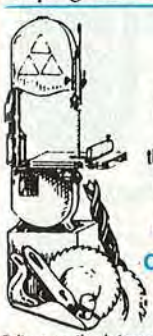

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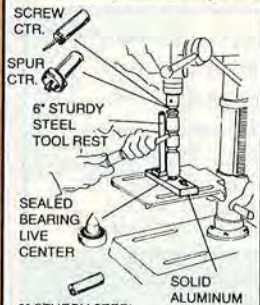


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## INTERNATIONAL TOOL HOLIDAY SUPER SPECIALS

**BOSCH** — Model 1587AVSK-50, 50th Anniversary Jigs Saw Kit w/ 13 blades — $156.00

**PORTER-CABLE** — Model 693PKX, 1 1/2 hp router w/2 bases, edge guide, template guide kit, & case — $229.00

**DELTA** — Model 22-560 12 1/2" Portable Planer — $389.00

**freud** — Model JS100 Biscuit Joiner — $94.00

**DEWALT** — Model DW991K2 14.4V 3/8" Cdls Drill with 2 batteries, charger, & steel case — $208.00

**HITACHI** — Model C10FS 10" slide comp. miter saw — $688.00 after rebate

## SENCO

| | | |
|---|---|---|
| SKS | NARROW CROWN STAPLER | 274 |
| SLP20 | BRAD NAILER W/CASE 5/8"-1 5/8" CAP | 278 |
| SFN40 | FINISH NAILER 1 1/4"-2 1/2" CAP | 389 |

## HITACHI

| | | |
|---|---|---|
| C7SBK | 7 1/4" CIRCULAR SAW WITH CASE | 102 |
| C8FB | 8 1/2" SLIDE COMPOUND MITER SAW | 456 |
| C10FC | 10" COMPOUND MITER SAW | 194 |
| C10FS | 10" SLIDE COMPOUND MITER SAW WITH $50 FACTORY REBATE | 738 |
| M12V | 3 HP VAR SPEED PLUNGE ROUTER INCLUDES $15 FACTORY REBATE | 238 |
| NR83A | FULL HEAD STRIP NAILER, 2 - 3 1/2 CAP | 388 |
| P20SB | 3 1/4" PLANER | 79 |
| SB75 | 3" X 21" 2 SPEED BELT SANDER | 139 |
| TR12 | 3 HP PLUNGE ROUTER | 158 |

FedEx Most tools under 70 lbs. shipped Fed Ex Express Service for $9.00... call for details!

## POWERMATIC

| | | |
|---|---|---|
| 13 | 6" X 89" EDGE SANDER W/3 BELTS | 629 |
| 14 | OSCILLATING SPINDLE SANDER W/3 SPINDLES | 295 |
| 15 | 15" PLANER W/ FREE REPLACEMENT KNIVES | 1295 |
| 24 | 2 HP SHAPER W/1/2" ROUTER BIT ATTACHMT | 995 |
| 44 | 14" BAND SAW, 1 HP, 1 PH W/3 BLADES | 645 |
| 54 | 6" JOINTER W/ENCLSD STAND & XTRA KNIVES | 545 |
| 60 | 8" LONG BED JOINTER | 1775 |
| 64 | 1 1/2 HP TBL SAW W/ACCU FENCE W/CARB BLD | 745 |
| 64L | 1 1/2 HP TBL SAW W/50" ACCU FNC W/CARB BD | 845 |
| 66 | 3 HP, 1 PH 10" T.A. SAW W/50" FENCE | 1995* |
| 66 | 5 H P, 1 PH 10" T.A. SAW W/50" FENCE | 2095* |
| 73 | 1 1 /2 HP DUST COLLCTR W/CLOTH LOWR BAG | 398 |
| 75 | 3 HP DUST COLLECTOR W/LOWR CLOTH BAGS | 675 |
| 84 | COMBIN. BELT/DISC SANDER W/XTRA PAPER | 445 |
| 1170I7 | DRILL PRESS W/MORTISING ATTACHMT | 399 |
| 3520 | NEW WOOD LATHE | 3495 |

*INCLUDES ACCESSORY PACKAGE & $200 U.S. SAVINGS BOND

## RYOBI

| | | |
|---|---|---|
| AP12 | 12" PORT. PLANER W/EXTRA BLADES | 369 |
| DBJ50 | DETAIL BISCUIT JOINTER | 68 |
| DC500K | DETAIL CARVER KIT | 62 |
| DS2000K | 2 SP DETAIL SANDR W/CS & ACCYS | 62 |
| HT20VSK | MULTI ROTARY TOOL W/CS & ACCYS | 45 |
| ML618 | 18" WOOD MINI LATHE | 199 |
| OSS450 | OSCILLATING SPINDLE SANDER | 149 |
| SC165VS | 16" VS SCROLL SAW | 164 |
| WDS1600 | WIDE DRUM SANDER | 564 |

## BESSEY

| | | BOX OF 5 (EACH) | PRICE (EACH) |
|---|---|---|---|
| K3.512 | 12" K BODY CLAMP | 28.95 | 30.95 |
| K3.524 | 24" K BODY CLAMP | 31.95 | 34.95 |
| K3.531 | 31" K BODY CLAMP | 34.95 | 36.95 |
| K3.540 | 40" K BODY CLAMP | 38.95 | 41.95 |
| KP BLOCKS | FOR USE WITH K BODY CLAMPS | | 24.95 |
| TGJ2.506 | 6" BAR CLAMP, 2 1/2" THROAT | | 8.95 |
| TGJ2.512 | 12" BAR CLAMP, 2 1/2" THROAT | | 9.95 |
| TGJ2.518 | 18" BAR CLAMP, 2 1/2" THROAT | | 10.95 |
| TGJ2.524 | 24" BAR CLAMP, 2 1/2" THROAT | | 11.95 |
| TGJ2.530 | 30" BAR CLAMP, 2 1/2" THROAT | | 13.45 |
| TGJ2.536 | 36" BAR CLAMP, 2 1/2" THROAT | | 14.95 |
| VAS23 | VARI ANGLE STRAP CLAMP | | 39.00 |
| WS3 | ANGLE CLAMP | | 20.95 |

**NEW LOW PRICE $168**
MSXE-636-2 OSCILLATING TRIANGULAR SANDER
*INCLUDES CASE & PAPER ASSORTMENT*
FEIN TURBO VAC ..... $248.00

## AIR

| | | |
|---|---|---|
| 0241NK | 18 GAUGE BRAD NAILER 3/8"-1 9/16" WITH CASE & 5000 NAILS | 96 |
| 0250NK | 18 GAUGE BRAD NAILER 3/4"-2" W/CASE & 5000 NAILS | 160 |
| 0232NK | 18 GA BRAD KIT 3/8"-1 1/4"WITH CASE | 68 |
| 0565T | ANGLE FINISH NAILER 1"-2 1/2" | 202 |
| 0626NK | NARROW CROWN 1/4" STAPLER 1/2"-1" WITH CASE & 5000 STAPLES | 103 |
| EZ-1 | SHOOTS 1/4", 3/8", 1/2" CRN STAPLES & BRADS, 5/8" CAP, W/CASE & FASTNERS | 96 |
| EZ-2 | SHOOTS BOTH BRADS & STAPLES | 138 |

## Makita

| | | |
|---|---|---|
| 1912B | 4 3/8"PLANER | 199 |
| 3901 | BISCUIT JOINER | 204 |
| 5007NBK | 7 1/4" CIRC SAW W/CS & BLADE | 124 |
| 6095DWE | 9.6V CDLS DRILL KIT W/2 BATT | 124 |
| 6019DWE | 7.2V CDLS DRILL KIT W/2 BATT | 95 |
| 6213DWAE | 12V CORDLESS KIT W/ 2 BATTERIES | 169 |
| 6233DWAE | 14.4V CORDLESS KIT W/2 BATTERIES | 194 |
| BO5001 | 5" RANDOM ORBIT SANDER | 67 |
| DA391DW | 9.6V ANGLE DRILL KIT | 178 |
| LS1011 | 10" COMPOUND MITER | 428 |
| LS1013 | 10" DUAL COMPOUND MITER SAW | 566 |
| LS1211 | 12" COMPOUND MITER | 778 |
| N1900B | 3 1/4" PLANER | 138 |

## DELTA

$100 REBATE ON ALL UNISAWS THRU 12/31/97

| | | |
|---|---|---|
| 11-990 | 12" DRILL PRESS | 183 |
| 14-650 | HOLLOW CHISEL MORTISER | 238 |
| 17-900 | 16 1/2" DRILL PRESS, 3/4 HP, 12 SPD | 398 |
| 22-540 | 12" BENCH TOP PLANER | 328 |
| 22-560 | *NEW* 12" PORTABLE PLANER | 369 |
| 23-710 | *NEW* SHARPENING CENTER | 174 |
| 28-185 | BENCH TOP BAND SAW | 167 |
| 31-050 | 1" BELT SANDER | 72 |
| 31-080 | 1" BELT/5" DISC SANDER | 88 |
| 31-280 | 6" BELT/12" DISC DANDING CENTER | 799 |
| 31-460 | 4" BELT/6" DISC SANDER | 124 |
| 31-695 | 6" BELT/9" DISC SANDER | 308 |
| 31-780 | B.O.S.S. OSCILLATING SPINDLE SANDR | 193 |
| 33-890 | 12" RADIAL ARM SAW | 1599 |
| 33-990 | 10" RADIAL ARM SAW | 809 |
| 34-182 | TENONING JIG | 89 |
| 36-250 | 10" SLIDE COMPOUND MITER SAW | 498 |
| 36-800 | GREAT WHITE UNISAW AFTER REBATE | 1599 |
| 37-070 | *NEW* 6" VS BENCH JOINTER | 264 |
| 37-350A | 8" PRECISION JOINTER, 1 1/2 HP | 1695 |
| 40-540 | 16" VS SCROLL SAW | 188 |
| 40-650 | Q-3 VAR SPEED SCROLL SAW | 489 |
| 43-355 | HEAVY DUTY WOOD SHAPER | 809 |
| 46-701 | 12" VS WOOD LATHE WITH STAND | 498 |

## DeWALT

GET A FREE COOLER WITH EACH DEWALT BENCHTOP TOOL PURCHASED!

| | | |
|---|---|---|
| DW321K | TOP HANDLE JIG SAW KIT | 162 |
| DW359K | 7 1/4" CIRCULAR SAW W/CASE | 128 |
| DW411 | 1/4 SHEET SANDER | 57 |
| DW420 | 5" RANDOM ORBIT SANDER, PSA | 68 |
| DW421 | 5" DSTLS RNDM ORB SANDER, VELCRO | 69 |
| DW423 | 5" VS DUSTLS RANDOM ORBIT SANDER | 93 |
| DW431 | 3" X 21" DSTLS BELT SANDER VAR SP | 183 |
| DW443 | 6" ROS SANDER VAR SP, VELCRO | 139 |
| DW610 | 1 1/2 HP ROUTER, 9 AMP | 147 |
| DW615 | 1 1/4 HP PLUNGE ROUTER, VAR SP | 162 |
| DW621 | 2 HP VS DSTLS PLUNGE ROUTER | 214 |
| DW625 | 3 HP HVY DTY PLUNGE RTR, VAR SP | 268 |
| DW673K | 7/8 HP LAMINATE TRIMMER KIT | 185 |
| DW675K | PLANER KIT, 7.2 AMP W/STEEL CASE | 159 |
| DW682K | BISCUIT JOINER KIT | 192 |
| DW705 | 12" MITER SAW W/CARB BLADE | 357 |
| DW708 | *NEW* SLIDING COMP. MITER SAW | 667 |
| DW733 | *NEW* 12 1/2" PORTABLE PLANER | 446 |
| DW744 | 10" PORTABLE TABLE SAW | 539 |
| DW788 | *NEW* 20" VAR. SPEED SCROLLSAW | 479 |
| DW935K | 14.4V CDLS CIRCULAR SAW KIT | 228 |
| DW936K | 18V CORDLESS CIRCULAR SAW KIT | 244 |
| DW972K2 | 12V CRDLS KIT/W BATTERY & CS | 178 |
| DW991K2 | DW991K WITH TWO BATTERIES | 208 |
| DW991KS2 | 14.4V CDLS DRILL & CIRC SAW KIT | 338 |
| DW995K | 18V 1/2" DRILL W/BATT, CHRGR & CS | 224 |
| DW995KS2 | 18V DRILL & SAW COMBO KIT | 358 |
| DW997K | 18V HAMMER DRILL KIT, 1/2" CHUCK | 244 |

## freud

| | | |
|---|---|---|
| TR215 | 8 1/2" COMPOUND SAW | 238 |
| JS100 | BISCUIT JOINER | 94 |
| JS102 | BISCUIT JOINER W/VAR. ANGLE FENCE | 118 |
| FT2000E | 3 hp PLUNGE ROUTER W/$30 REBATE | 204 |
| EB100 | EDGE BANDING SYSTEM | 214 |
| F410 | 10" X 40T QUIET BLADE | 48 |
| F810 | 10" X 80T QUIET BLADE | 73 |
| LM72M010 | 10" X 24T FLAT TOP RIP BLADE | 36 |
| LU82M010 | 10"X 60T CROSSCUT/RIP BLADE | 44 |
| LU84M010 | 10" X 50T ATB COMBO BLADE | 40 |
| LU85M010 | 10" X 80 T ATB FOR MIRROR FINISH! | 58 |
| LU87M010 | 10" X 24T RIP BLADE THIN KERF | 42 |
| LU88M010 | 10" X 60T CROSSCUT THIN KERF | 48 |
| LU89M010 | 10" X 72T TCH NON FERROUS METAL | 57 |
| LU92M010 | 10" X 80T TCH - BEST FOR LAMINTS | 59 |
| LU98M010 | 10" X 80 T TCH LAMINATES OR WOOD | 67 |
| SD308 | 8" SAFETY DADO WITH CASE | 116 |
| SD508 | *NEW 8" SUPER DADO SET* | 167 |
| SD608 | DIAL-A-WIDTH DADO | 198 |
| TK206 | 10" X 24T THIN KERF RIP BLADE | 28 |
| TK406 | 10" X 60T THIN KERF CROSSCUT | 36 |
| TK806 | 10" X 80T THIN KERF CROSSCUT | 47 |
| TK906 | 10" X 50T THIN KERF COMBO | 34 |

*Continued from page 102*

# Marathon blade goes the distance...economically

Is there room in this world for another circular saw blade? Apparently so since Irwin offers an economical line of carbide-tipped, thin-kerf blades it calls Marathon.

During my test of a 10", 36-tooth blade, I experienced very good crosscuts in both solid stock and plywoods, with only minimal tearout at both top and bottom. Minor sanding before assembly cleaned up the edges nicely.

To test ripping capability, I ran several species of hardwood through the blade, and the Marathon's .088"-wide teeth gobbled up the stock and left clean, joinable edges every time. The thin-kerf design of the blade requires less power and wastes less stock during cutting. And the antikickback safety feature limits the amount of material each tooth can remove.

The line includes 3⅜-, 5½-, 6½-, 7¼-, 8-, 8¼-, 9-, and 10-inch-diameter blades, and a variety of tooth configurations. Irwin also carries a Marathon Gold industrial grade saw blade line which features harder, longer-lasting C4 tungsten carbide teeth.

Would I have a Marathon saw blade in my shop? You bet! For the price, it does a great job.

*—Tested by Bob McFarlin*

**PRODUCT SCORECARD**

**Marathon Circular Sawblade (10", 36-tooth carbide)**

| | |
|---|---|
| Performance | ★ ★ ★ ☆ ☆ |
| Price | About $35 |
| Value | ★ ★ ★ ★ ★ |

American Tool Co., 8400 Lake View Parkway, Suite 400, Kenosha, WI 53142. Call 414/947-2440.

*Continued on page 114*

**Maybe 30 bucks will get you off the fence.**

If you've been thinking about getting rid of that old clunker of a fence, maybe this will get you going.

Choose the premium fence that best fits your needs: A versatile, precision Delta Unifence® or a commercial-duty Biesemeyer® Fence. Make your purchase between August 1 and December 31, 1997, and we'll send you a check for $30. That's one simple win-win situation. Call for the number of your nearest participating Delta dealer. Delta International Machinery Corp., 800-438-2486. www.deltawoodworking.com

**Econ-Abrasives**

*WE MAKE ABRASIVE BELTS ANY SIZE, ANY GRIT!*

**Standard Abrasive Sheets**

CABINET PAPER

| | 50/pk | 100/pk |
|---|---|---|
| 60D | $16.70 | $30.00C |
| 80D | 15.60 | 27.80C |
| 100 thru 150C | 14.50 | 25.60C |

FINISHING PAPER

| | | |
|---|---|---|
| 80A | $ 11.15 | $18.90C |
| 100 thru 280A | 10.00 | 16.70C |

NO LOAD PAPER(white)

| | | |
|---|---|---|
| 100 thru 400A | $12.25 | $21.25C |

"C" = 100 SHEETS

Velcro® Vacuum Discs
8 Hole pattern for Bosch sanders

| Dia. | Grit | Price |
|---|---|---|
| 5" | 60 | $ .48ea |
| 5" | 80 | .46 |
| 5" | 100 thru 320 | .45 |

★ *Available in 5 hole pattern* ★

*Wide Belts*Rolls*Flap Wheels
*Pump Sleeves*PSA Discs
*Router & Wood Bits*Wood Glue

**ABRASIVE BELTS**

Belts are resin bond cloth with a bi-directional splice, specify grits.

| | | | |
|---|---|---|---|
| 1X30 | $ .81 ea | 3X24 | $ .93 ea |
| 1X42 | .81 ea | 3X27 | .96 ea |
| 1X44 | .81 ea | 4X21 3/4 | 1.06 ea |
| 2 1/2X16 | .85 ea | 4X24 | 1.10 ea |
| 3X18 | .86 ea | 4X36 | 1.35 ea |
| 3X21 | .90 ea | 6X48 | 3.50 ea |
| 3X23 3/4 | .93 ea | 6x89 | 6.24 ea |

*OTHER SIZES ON REQUEST*

HEAVY DUTY SPRING CLAMPS

Clamps come w/PVC tips and grips.

| Size | Price |
|---|---|
| 4" | $1.75 ea |
| 6" | 2.25 |
| 8" | 3.50 |

JUMBO ROUTER PAD(24" x 36")

It will not allow small blocks of wood to slip out under router or sanding applications. ROUTER PAD ONLY $8.95ea.

*JUMBO BELT CLEANING STICK ONLY $8.80*

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## RYOBI

AWARDED "BEST BUY" BY AMERICAN WOODWORKER MAGAZINE!

### OSCILLATING SPINDLE SANDER

Nothing beats this machine for contour and curve sanding. 1/2" to 3" drum sizes (includes 1/2" and 1") give you the control you need. Removes stock fast using the whole drum and prevents sanding burn marks.

- 120V, 3.5 amps • 1680 RPM
- 45 oscillations per minute
- Dust collection port
- 29 lbs. tool weight

LIMITED QUANTITIES

ITEM 30484-6VJA **$129.99**

### SOLID HARDWOOD WORKBENCH

Crafted from solid hardwoods, not only does this bench look good, but it also outlasts and out-performs other benches. The wood is dried and given a long lasting and protective varnish finish. Includes large flush mounted vises. Twin rows of 10 bench dog holes hold just about any project. Tools shown sold separately.

- 20 bench dog holes
- 2 vises: 13"W x 1-1/4"D x 7-1/2"L max.
- Work area: 49-1/4" x 13-1/2"
- Trough: 47-3/8"L x 5-1/2"W x 2-3/4"D
- Overall: 55"L x 25"W x 32-3/4"H
- Weight: 64 lbs.

~~$132.99~~ **$109.99**
ITEM 01635-5VJA

## CHICAGO Electric Power Tools

COMPARE AT $79.95

### 16.8 VOLT 3/8" CORDLESS DRILL KIT W/ KEYLESS CHUCK

Powerful heavy duty battery means long run times between charges. T-Handle design balances drill for more accurate drilling.

- Variable speed, reversible; 0 to 900 RPM
- Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic bit holder, charger, battery, Jacobs® keyless chuck, and carrying case • 6 torque settings
- Maximum torque: 200 in. lbs.

ITEM 36387-3VJA **$59.99**

**16.8V REPLACEMENT BATTERY** ITEM 36390-0VJA **$39.99**

## CHICAGO Electric Power Tools INDUSTRIAL

DUAL VARIABLE SPEED

COMPARE AT $89.95

### 14.4V, 3/8" CORDLESS DRILL KIT W/ KEYLESS CHUCK

Get long run times and all the extras! Mechanical brake stops chuck in seconds. Uses high quality Jacobs® chuck. Two speed ranges, good for drilling & driving.

- Dual speed ranges, 0 to 340 and 0 to 1200 RPM reversible • 16 torque settings
- Includes 6 pc. drill bit set, 6 pc. screwdriver bit set, magnetic extension bit, 1 hour quick charger, battery with power indicator, and carrying case

ITEM 35991-4VJA **$69.99**

**14.4V BATTERY** ITEM 35992-0VJA **$34.99**

COMPARE AT $19.95

### 8 PC. PLUG CUTTER SET

This set includes four standard plug cutters and four chamfered cutters. These tapered plugs fill countersunk holes to conceal screws and dowels perfectly.

- 3/8" shanks
- Sizes of each type: 5/8", 1/2", 3/8", and 1/4"
- Includes individually organized wooden carrying case

ITEM 33571-4VJA **$12.99**

### 4 PC. PLUG CUTTER SET

- Sizes: 1/4", 3/8", 1/2", 5/8"
- Slightly oversized taper for snug fit
- 1/4" shanks

~~$7.99~~ **$4.99**
ITEM 06956-2VJA

COMPARE AT $54.95

### TUNGSTEN CARBIDE TIPPED ROUTER BIT SETS

Both include individually organized storage cases. • 1/4" shanks.

### 15 PC. ASSORTED BITS

Includes: 1-1/4" rabbeting♦, 1-3/8" cove♦, 1-1/16" roman ogee♦, 1-1/4" rounding over♦, 1/2" flush trimming♦, 1-3/16" 45° chamfer♦, 1/2" dovetail, 3/4" straight, 1/2" straight, 3/8" V-groove, 1/4" combination panel, 1/4" straight, 1/2" mortising, 1/4" cove, 1/8" straight ♦Includes pilot bearing

ITEM 31164-9VJA **$39.99**

### 4 PC. ROUNDING OVER BITS

- Sizes: 1/8", 1/4", 3/8", & 1/2"
- Set includes 4 rounding over bits w/pilot bearing tips
- 2 flutes each
- 1-5/32" long shanks

~~$29.99~~ **$19.99**
ITEM 33078-5VJA

## CHICAGO Electric Power Tools INDUSTRIAL

### 4-1/2" ANGLE GRINDER

- Includes 4-1/2" x 3/16" depressed center wheel and 3-position side handle
- 120V, 5.5 amps, 10,000 RPM
- 8 foot power cord • 12"L x 2-7/8"W
- 5/8"-11 spindle with 7/8" arbor adapter

~~$44.99~~ **$34.99**
ITEM 31309-8VJA

### 4-1/2" x 1/4" GRINDING WHEELS

PACK OF 10

- 24 grit, 7/8" arbor

| FOR | ITEM | PRICE |
|---|---|---|
| Metal | 06674-0VJA | $8.99 |
| Masonry | 07422-0VJA | $9.99 |

## CENTRAL MACHINERY

### 4" x 36" BELT/ 6" DISC SANDER

Adjustable belt sands inside and outside curves. Cast aluminum sanding disc features a cast aluminum table that locks in any angle from 0° to 45°. Table can be repositioned for use with belt or disc.

Includes: 7-1/2" x 5" cast aluminum table, miter gauge, and adjustable backstop; 4000 FPM belt speed; 1725 RPM belt speed; 1/3 HP, 1725 RPM, 115V, single phase

SPECIAL PURCHASE!

ITEM 05154-6VJA **$59.99**

### SANDING BELT CLEANER

- Increase the life of your sanding belts and discs up to 500%
- 8-1/2" x 1-1/2" x 1-1/2"

ITEM 30766-1VJA **$4.99**

### HOLE SAW SET

Cut smooth, clean, accurate holes through wood, drywall, or even plaster up to 1" thick! Ideal for plumbers and electricians.

### 11 PC. HOLE SAW KIT

Includes 8 tool steel cups sized 3/4", 7/8", 1", 1-1/4", 1-1/2", 1-3/4", 2", and 2-1/2", plus 1/4" and 3/8" mandrels, a 1/4" bit, a hex wrench, and a blow mold case.

ITEM 01263-1VJA **$7.99**

### 10 PC. LARGE HOLE SAW KIT

Includes cutting cup sizes 2-1/2", 3", 3-1/2", 4", and 5", plus 3/8" mandrell, drive plate, hex wrench, & blow mold case.

ITEM 36222-2VJA **$8.99**

## DRILL MASTER

### 115 PC. TITANIUM NITRIDE COATED DRILL BIT SET

Last up to six times longer than standard bits, penetrate 75% faster, & cut more freely, don't expand with heat. Resharpenable. Includes index.

29 fractional sizes 1/16" thru 1/2" by 64ths; 26 letter sizes A thru Z; 60 numbered sizes 1– 60

~~$69.99~~ **$49.99**
ITEM 01611-1VJA

### 29 PC. SET

Sizes: 1/16" thru 1/2" by 64ths; Steel index box

ITEM 05889-5VJA ~~$26.99~~ **$19.99**

## DRILL MASTER

### TITANIUM NITRIDE FORSTNER BIT SET

The combination of high carbon steel with a titanium nitride coating will keep you drilling long after other bits have become worthless. Forstner design makes smooth flat bottomed holes, or angled holes with oval openings. Stores in its own box.

### 7 PC. SET

- Sizes: 1/4", 3/8", 1/2", 5/8", 3/4", 7/8", and 1"

~~$14.99~~ **$9.99**
ITEM 01903-8VJA

### 20 PC. SET

COMPARE AT $49.95

- 20 sizes from 1/4" to 3/4" by 16ths, 7/8", 15/16", 1" to 2" by 8ths

ITEM 31130-7VJA **$34.99**

## DELTA®

Delta 22-540

### 12" PORTABLE PLANER

- Motor: 15 amp, 120V
- Capacities: 12" width, 6" thick, 3/16" depth of cut
- 26.2 FPM feed rate
- 8000 RPM, 16,000 CPM
- Includes removable table extensions, and fold away depth adjustment for easy transport
- 27-1/4" x 20-1/2" x 15" overall dimensions • 68 lbs. tool weight

ITEM 00258-3VJA **$339.99**

### RECONDITIONED PLANER

LIMITED QUANTITIES

- Same specs as above

ITEM 06177-1VJA **$299.99**

4053

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Circle No. 46

*Continued from page 112*

# Lightweight bar clamps offer deeper reach

When I need to clamp up a cabinet carcass in the *WOOD* magazine shop, I usually reach for the Jorgensen aluminum bar clamps. I can use a lot of them without adding much weight to the assembly. Now, the Adjustable Clamp Company has added a line of these clamps with a deeper clamping reach.

The new Deep-Reach Clamps have 1¾"-wide, fiberglass reinforced plastic jaws with a maximum reach of 3¾". I particularly liked the nonmarring faces on these bigger jaws.

**PRODUCT SCORECARD**

Jorgensen Deep-Reach Clamps

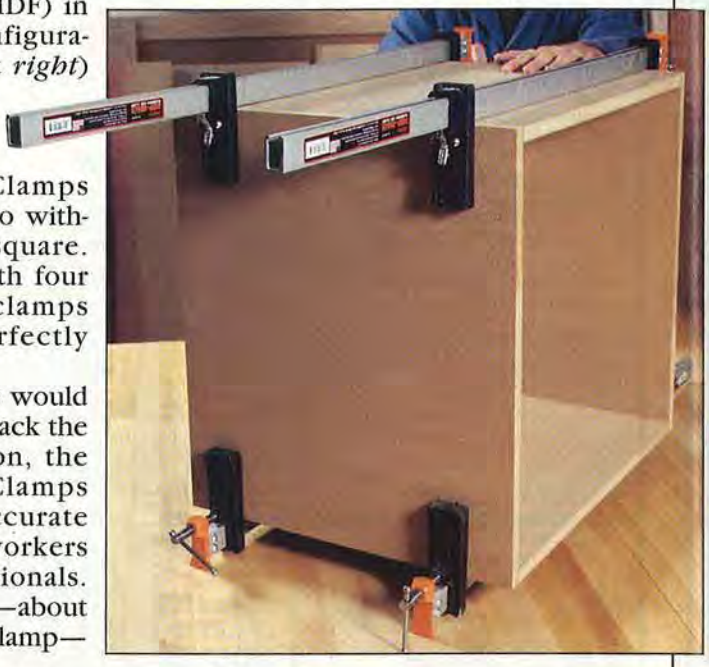
| | |
|---|---|
| Performance | ★ ★ ★ ★ ☆ |
| Price | 12" about $30; 24" about $32<br>36" about $34; 48" about $35 |
| Value | ★ ★ ★ ★ ★ |

Adjustable Clamp Co., 417 North Ashland Ave., Chicago, IL 60622. Call 312/666-0640.

To check their ability to clamp up squarely, I clamped up four pieces of ¾×20×22" medium density fiberboard (MDF) in an open box configuration (as shown at *right*) and measured the diagonals. I found that the four Deep-Reach Clamps brought the box to within 1/16" of being square. The same test with four Bessey K-Body clamps resulted in a perfectly square box.

So which clamps would I buy? While they lack the K-Body's precision, the Deep-Reach Clamps proved plenty accurate for home woodworkers and most professionals. Their lower price—about $7 less for a 24" clamp—makes them an attractive alternative to the K-Body clamps.

*—Tested by Jan Hale Svec*

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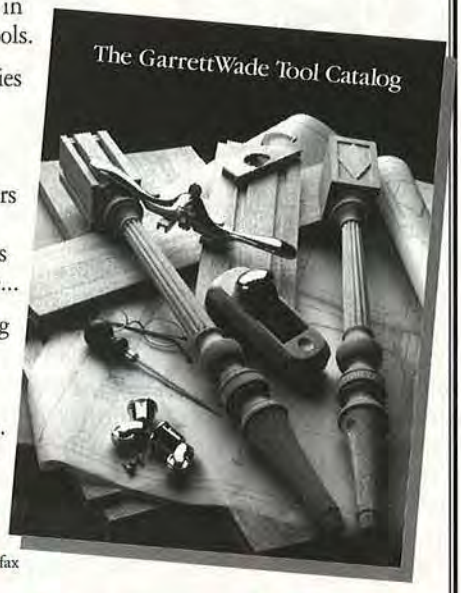


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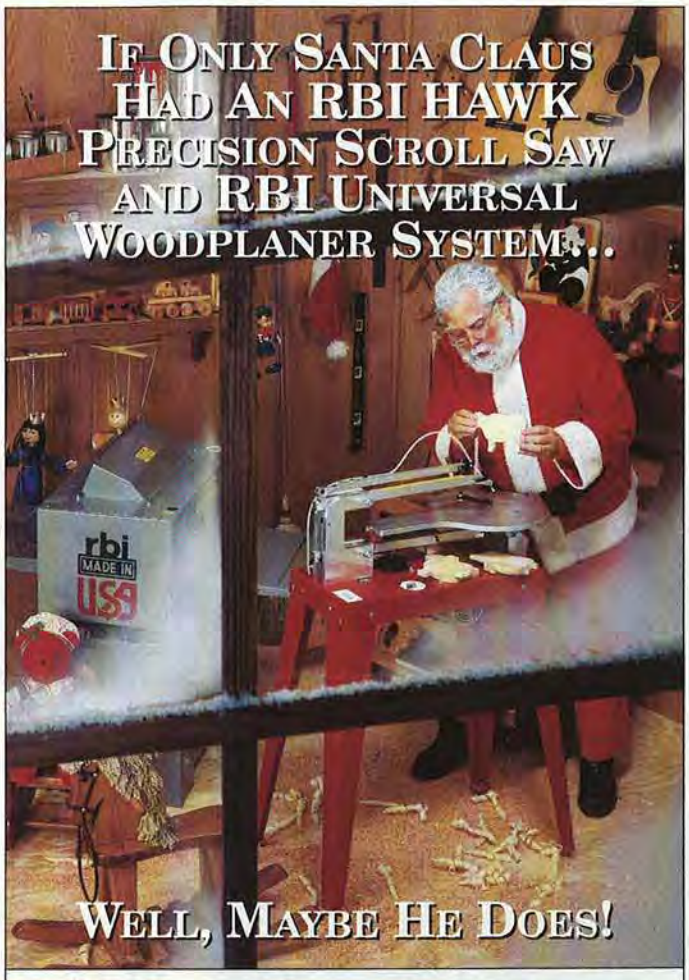


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# MYSTERIES OF THE MORTISE MACHINE

**Old tools possess strong nostalgic appeal. But for many collectors, an even greater attraction is the challenge of figuring out what a tool does and how it does it.**

Print this article

Everything from barn framing to fine furniture featured mortise-and-tenon joinery around the turn of the century. And the best locksets slipped into mortised door edges. All this mortise-making prompted toolmakers and tinkerers to develop devices that would make mortising easier—and themselves richer. Few of their inventions did both; many did neither.

## Seems simple, at first

We don't know if the A.W. Miller mortise-joint cutter *left* earned much money for its maker. And it's debatable how much quicker or easier it made mortising. But it does illustrate an enduring pleasure of the old-tool hobby—trying to figure out how things work.

The Miller machine seems straightforward enough at first glance. A ¾"-wide, 1¼"-long cutting iron, sharpened on both ends, mounts at one end of a two-foot-long handle. About 6½" from the blade, the handle pivots on a fixture, which slides up and down on the cast-iron frame. The blade reaches a depth of about 5".

Clamps at the bottom of the frame grip the workpiece. They open to about 3⅜".

## But what about the rods?

A pair of rods hanging from ears on the handle hub raise the first questions. Then you start to wonder about the adjustable blocks behind the rods. Suddenly, it's a lot less clear just how this thing works. Apparently, you *don't* simply swing the handle back and forth to scrape out a mortise.

The rods have to reach into the mortise—they're attached to the handle and extend down as far as the cutting iron. But they aren't sharp enough nor are they attached solidly enough to be plunged into the wood. Does that mean the Miller machine was designed to clean out a mortise roughed out by drilling?

Ratchet-style teeth on the rods could indicate a self-feeding action for the sliding handle-and-iron assembly. But that would seem to require pawls to engage the rods. Where are they? Are some parts missing? Or do the teeth serve some other function?

As for the blocks, they obviously guide the rods. But what that accomplishes is uncertain since the rods' function isn't clear. Perhaps the blocks limit mortise length. But how?

## So, what do you think?

Many old-tool collectors love to tackle questions like these. Finding the answers can send them searching through dusty catalogs, magazines, books, and other publications or, even, actually trying out the tool.

If you have some ideas about how the Miller mortise cutter works, let us know. Write to Yesterday's Tools, *WOOD*® Magazine, 1912 Grand Ave., Des Moines, IA 50309-3379.

Mortise machine courtesy of Dick Gowen, Aurora, Nebraska
Photograph: King Au
Written by Larry Johnston

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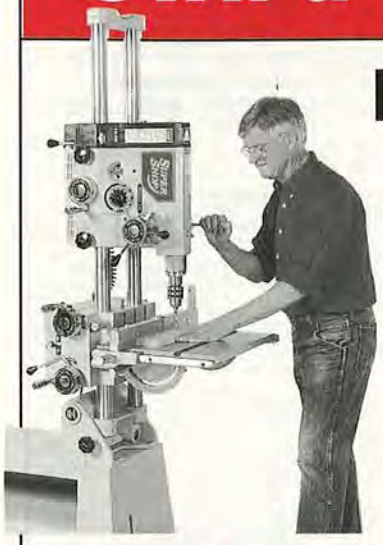

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## DELTA TOOLS

| Model | Description | List | Sale |
|---|---|---|---|
| 31-695 | 6" Belt/9" Disc Sander | 441 | 299 |
| 23-710 | New Sharpening Center | 217 | 169 |
| 23-680 | 6" Bench Grinder 1/4 HP | 80 | 69 |
| 31-460 | 4" Belt/Disc Sander | 198 | 125 |
| 40-560 | 16" 2 speed Scroll Saw | 230 | 155 |
| 40-540 | NEW 16" var/spd Scroll Saw | 249 | 179 |
| 11-990 | 12" Bench Drill Press | 255 | 184 |
| 11-090 | 32" Radial Bench Drill Press | 405 | 279 |
| 43-505 | 1/2" Bench Router/Shaper | 398 | 289 |
| 22-540 | 12" Bench Top Planer | Sale | 329 |
| 28-195 | NEW 10" Band Saw | 390 | 309 |

**22-560 NEW 12-1/2" Bench top Planer Sale 395.00**

| | | | |
|---|---|---|---|
| 36-865 | NEW Versa Feeder Stock Feeder | | 249 |
| 36-220 | 10" Compound Mitre Saw | 294 | 199 |
| 28-185 | Bench Band Saw | 213 | 168 |
| 37-070 | 6" v/spd Bench Jointer | 351 | 265 |
| 14-650 | Hollow Chisel Mortiser | 380 | 239 |
| 33-990 | 10" Radial Arm Saw | 981 | 799 |
| 36-905 | 30" Unifence | 346 | 245 |
| 36-906 | 50" Delta Unifence | 444 | 325 |
| 17-900 | 16-1/2" Floor Drill Press | 490 | 399 |
| 37-190 | 6" Deluxe Jointer | 603 | 445 |
| 36-285 | 8-1/4" Builders Saw w/ stand | Sale | 268 |
| 36-210 | 10" Compound Mitre Saw | 344 | 219 |
| 34-555 | Sliding Table | 487 | 289 |
| 36-250 | 10" Slide Compound Saw | 825 | 489 |
| 31-780 | Oscillating Spindle Sander | 253 | 194 |
| 46-700 | 12" Wood Lathe | 575 | 465 |
| 37-154 | 6" Jointer DJ-15 | Sale | 1289 |

**The following Delta tools have $50.00 rebates ! Take $50 off price shown.**

| | | | |
|---|---|---|---|
| 34-444 | 10" Contractors Table Saw | Sale | 659 |
| 34-445Z | 10" Table Saw w/ 30" fence, cast iron wing, 34-914 table board, & 35-032 blade | | 839 |
| 28-275 | 14" Band Saw 3/4 HP | Sale | 635 |
| 28-280Z | 14" Bans Saw 1 HP w/ 50-274 mobile base, 28-843 rip fence, & 28-266 cool blocks | | 839 |
| 40-650 | Q3 18" Scroll Saw | Sale | 479 |
| 22-675 | DC380 15" Planer | Sale | 1175 |
| 31-280 | Sanding Center w/ stand | Sale | 789 |

## MILWAUKEE TOOLS

| | | | |
|---|---|---|---|
| 6527 | NEW Sawzall with case | 343 | 169 |
| 6537-2 | 6527 w/quick lok blade change | 224 | 175 |
| 0415-21 | 12V Drill w/kyls chuck&2 batt | 380 | 175 |
| 0224-1 | 3/8" Drill 4.5 amp magnum | 236 | 132 |
| 0234-1 | 1/2" Drill 4.5A mag 0-850 rpm | 255 | 129 |
| 0235-1 | 1/2" Drill w/keyless chuck | 255 | 135 |
| 0244-1 | 1/2" Drill 4.5A mag 0-600 rpm | 255 | 129 |
| 0222-1 | 3/8" Drill 3.5 amp 0-1000 rpm | 213 | 119 |
| 0228-1 | 3/8" Drill 3.5 amp 0-1000 rpm | 207 | 109 |
| 0375-1 | 3/8" close quarter Drill | 255 | 148 |
| 0379-1 | 1/2" close quarter Drill | 288 | 165 |
| 6546-1 | cdls Scrwdvr 200 & 400 rpm | 150 | 89 |
| 6547-1 | 6546-1 w/bits,1/4" chuck & cs | 185 | 108 |
| 5399 | 1/2" D-hdle Hammer Drill Kit | 356 | 219 |
| 6507 | Original SawZall with case | 278 | 155 |
| 5397-1 | 3.8" v/ spd Hammer Drill Kit | 275 | 145 |
| 5371-1 | 1/2" v/ spd Hammer Drill Kit | 360 | 194 |
| 3107-1 | 1/2" v/spd right angle Drill Kit | 411 | 234 |
| 3300-1 | 1/2" v/ spd right angle Drill | 378 | 219 |
| 5682 | Router 2 HP w/ collets | 367 | 165 |
| 6142 | 4-1/2" Grinder w/cse & acc. | 224 | 119 |
| 6365 | 7-1/4" Circular Saw 13 amp. | 229 | 125 |
| 6368 | 6365 w/fence, blde,& cse | 259 | 142 |
| 6256 | Top Handle Jig Saw | 278 | 149 |
| 6490 | 10" Mitre Saw | 496 | 265 |
| 6491 | 6490 w/ carbide blade & bag | 594 | 328 |
| 6494 | 10" Compound Mitre Saw | 585 | 315 |
| 6266-6 | Top Handle Jig Saw | 315 | 159 |
| 6496 | 10" Slide Compound Saw | 1050 | 569 |

## FREUD CARBIDE TIPPED SAW BLADES
**5/8" Bore - Industrial Grade**

| Item | Description | Teeth | List | Sale |
|---|---|---|---|---|
| LU72M010 | Gen Pur. A.T.B. | 10" 40 | 69 | 42 |
| LU82M010 | Cut-off | 10" 60 | 93 | 44 |
| LU84M011 | Comb | 10" 50 | 78 | 42 |
| LU85M010 | Super Cut-off | 10" 80 | 115 | 59 |
| LM72M010 | Ripping | 10" 24 | 69 | 38 |
| LU73M010 | Cut off | 10" 60 | 84 | 45 |
| LU87M010 | Thin Kerf | 10" 24 | 72 | 44 |
| LU88M010 | Thin Kerf | 10" 60 | 88 | 49 |
| LU98M010 | Ultimate | 10" 80 | 128 | 68 |
| LU91M010 | Compnd Mitre | 10" 60 | 88 | 54 |
| F410 | Quiet Blade | 10" 40 | 95 | 49 |
| TK303 | 7-1/4" Finishing | 40 | 38 | 25 |
| TK906 | 10" Combo | 50 | 53 | 32 |
| SD308 | 8" Dado - Carbide | | 230 | 119 |
| SD506 | 6" carbide w/case & shims | | 292 | 145 |
| SD508 | 8" carbide w/case & shims | | 344 | 168 |
| FB100 | 16 piece Forstner Bit Set | | 338 | 194 |
| 94-100 | 5 pc. Router Bit Door System | | 320 | 169 |

**The following Freud tools have rebates ! The price shown is before rebate.**

| | | | |
|---|---|---|---|
| FJ85 | Top Hdl Jig Saw - $25 rebate | Sale | 125 |
| JS102 | Biscuit Jointer - $50 rebate | Sale | 179 |
| FT2000E | Plunge Router - $30 rebate | Sale | 205 |
| TR215 | 8-1/4" Mitre Saw - $50 rebate | Sale | 349 |
| FE82 | 3-1/4" Planer - $25 rebate | Sale | 115 |

## WAP VACUUMS

| Model | Description | List | Sale |
|---|---|---|---|
| 766RDF | 10 gallon turbo vacuum | 845 | 465 |
| 766RDF-D | "Drywaller" 10 gal turbo vacuum | 915 | 549 |
| 766RDF-DAS | Above vac w/ auto start | 950 | 589 |

## MAKITA TOOLS

| | | | |
|---|---|---|---|
| 5090DW | 3-3/8" Saw Kit 9.6 volt | 280 | 155 |
| DA391D | 3/8 angle Drill 9.6V | 166 | 114 |
| DA391DW | 3/8" angle Drill Kit 9.6V | 341 | 189 |
| ML900 | Incandescent Flashlight 9.6V. | | 9.95 |
| 6095DWE | 9.6 volt Drill Kit w/2 batt | Sale | 125 |
| 6095DWLE2 | 6095DWE w/flashlight | Sale | 139 |
| 6095D | 6095DW Drill only & cse | Special | 65 |
| 632007-4 | 9.6 volt Battery | 47 | 30 |
| 632002-4 | 7.2 volt Battery | 39 | 28 |
| 6203DWAE | 9.6V 3/8" Drill Kit w/2 batt | 351 | 159 |
| 6211DWHE | 12V 3/8" Drill Kit w/2 batt | 368 | 175 |
| 6311DWHE | 12V 1/2" Drill Kit w/2 batt | 399 | 205 |

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| | | | |
|---|---|---|---|
| 6213DWAE | 12V 3/8" Drill Kit | 325 | 169 |
| 6233DWAE | 14.4V 3/8" Drill Kit | 358 | 199 |

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| | | | |
|---|---|---|---|
| 9900B | 3"x21" Belt Sander w/bag | 347 | 179 |
| 9924DB | 3"x24" Belt Sander w/bag | 360 | 189 |
| 4301BV | Orb. var. spd Jig Saw 3.5A | 292 | 155 |
| JR3000V | v/ spd Recip Saw w/case | 264 | 135 |
| 9820-2 | Blade Sharpener | 433 | 215 |
| N1900B | 3-1/4" Planer with case | 263 | 139 |
| 1912B | 4-3/8" Planer | 352 | 199 |
| N9514B | 4" Disc Grinder 4.6 amp | 118 | 65 |
| DA3000R | 3/8" Angle Drill | 355 | 179 |
| 2708W | 8-1/4" Table Saw | 637 | 309 |
| 6405 | 3/8" Drill Rev. 0-2100 rpm | 115 | 65 |
| 6510LVR | 3/8" Drill Rev. 0-1050 rpm | 188 | 98 |
| 6013BR | 1/2" Drill Rev. 6 amp | 270 | 149 |
| 9401 | 4" x 24" Belt Sander w/bag | 458 | 225 |
| 5007NB | 7-1/4" Circ Saw w/ case | 250 | 125 |
| LS1011 | 10" Slide Compound Saw | 995 | 429 |
| LS1211 | 12" Slide Compound Saw | 1620 | 779 |
| 3901 | Plate Joiner Kit | 376 | 209 |
| 3612C | NEW 3 HP Plunge Router | 492 | 259 |
| LS1040 | NEW 10" Cmpnd Miter Saw | 460 | 259 |
| LS1013 | NEW 10" Dual Compound Slide Miter Saw | 1088 | 599 |
| BO5010 | NEW 5" Random Orbit Sander with dust pickup | 142 | 72 |

## SENCO AIR NAILERS

| | | | |
|---|---|---|---|
| SFN1+ | Finishing Nailer 1" - 2" w/ cs | 448 | 345 |
| SN325 | Nailer 1-7/8" - 3-1/4" | 665 | 389 |
| SLP20 | Pinner w/cs 5/8 -1-5/8" | 422 | 279 |
| SKS | Stapler 5/8" - 1-1/2" | 390 | 279 |
| SN70 | Framing -Clip Hd 2"-3-1/2" | 725 | 449 |
| SN65 | Framing -Full Hd 2"-3-1/2" | 709 | 465 |
| SFN40 | Finish Nailer 1-1/4 - 2-1/2" | 569 | 389 |

## BOSTITCH AIR NAILERS

| | | | |
|---|---|---|---|
| N80S-1 | Stick Nailer | Super Sale | 339 |
| N80C-1 | Coil Nailer | Sale | 339 |
| RN45 | Coil Roof Nailer 3/4 - 1-3/4 | 845 | 369 |
| N60FN-2K | Finishing Nailer w/ case | 557 | 275 |
| BT35-2K | Brad Tacker 5/8" - 1-3/8" with case, oil, & brads | 279 | 125 |
| CWC100 | 1 HP Pancake Compressor | 440 | 289 |
| MIIIFS | Flooring Stapler 15 gauge | 902 | 529 |
| S32SX-1K | Finish Stapler-1/2" - 1-3/8" with case & oil | 269 | 145 |

## SKIL TOOLS

| | | | |
|---|---|---|---|
| 77 | 7-1/4" Worm Drive Saw | Sale | 158 |
| 77M | 77 Mag Worm Saw | Sale | 168 |

## PANASONIC CORDLESS

| | | | |
|---|---|---|---|
| EY6181CRKW | 9.6V Drill Kit w/ 2 batteries, 1 hour charger, & case | 307 | 169 |
| EY6100EQKW | 12V Drill kit w/ 2 Ironman batteries, 15 min. charger, & case | 379 | 179 |
| EY6100SEQK | Same as above but has 1 Ironman battery and 1 diagnostic battery | Sale | 204 |
| EY6101SQK | 12 volt 1/2" Drill w/ 15 min. charger, diagnostic battery, & case | 438 | 249 |
| EY6101EQKW | Same as above but has two Ironman batteries | Sale | 249 |
| EY3503FQWKW | NEW 5-3/8" 12V Wood Cutting Saw Kit | 500 | 259 |

## PASLODE IMPULSE GUNS

| | | | |
|---|---|---|---|
| IM250 | Trimpulse Finish Nailer Kit | 1130 | 548 |
| IM325 | Impulse Framing Nailer Kit | 1130 | 548 |
| CT325SS | Cdls Framing Nailer Kit | 1120 | 495 |

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|---|---|---|---|
| 140 | Portable sndr w/ 4-1/2" spindle | 625 | 559 |
| 146 | Portable sander w/ 9" spindle | 685 | 609 |
| 100 | Floor mount sndr 4-1/2" spindle | 785 | 709 |
| 106 | Floor mount sander 9" spindle | 845 | 759 |

## SIOUX TOOLS

| | | | |
|---|---|---|---|
| 8030 | 3/8" var/spd Drill | 263 | 165 |
| 8000 | 3/8" var/spd close qtr Drill | 211 | 135 |
| 690 | 5" Air Random Orbit Sander | 228 | 132 |

***NEW Dewalt Bench Top Tools***

**DW708**
12" Dual Compound Slide Mitre Saw
**Sale 679**

**DW788**
20" Scroll Saw
**Sale 489**

**DW733**
12" Planer
**Sale 459**

**DEWALT**
High Performance Industrial Tools

## DEWALT TOOLS

| Model | Description | List | Sale |
|---|---|---|---|
| DW321K | Top Handle Jigsaw Kit | 300 | 164 |
| DW364 | 7-1/4" Circ. Saw w/brake | 294 | 162 |
| DW610 | 1-1/2 HP 2 handle Router | 266 | 152 |
| DW411 | 1/4 sheet Palm Sander | 88 | 58 |
| DW100 | 3/8" Drill, 4 amp,0-2500 rpm | 118 | 68 |
| DW682K | Biscuit Joiner with case | 448 | 199 |
| DW705 | 12" Compound Mitre Saw | 734 | 359 |
| DW625 | 3 HP v/ spd PlungeRouter. | Sale | 279 |
| | **DW625 router comes with DW6913 edge guide !** | | |
| DW621 | NEW 2 HP Plunge Router | 400 | 218 |
| | **DW621 comes with Free DW6956 fine height adjuster** | | |
| DW675K | 3-1/8" Planer with case | 292 | 164 |
| DW431 | 3 x 21 v/spd Belt Sander | 338 | 188 |
| DW421 | 5" Palm Ran. Orb Sander | 144 | 74 |
| DW444 | 6" Ran Orb Sander | 266 | 145 |
| DW443 | DW444 w/hook & loop pad | 266 | 145 |
| DW673K | Laminate Trimmer Kit | 364 | 188 |
| DW274 | Drywall Gun, 0-4000, 6.3 amp | 160 | 95 |
| DW268 | Tek Gun, 0-2500, 6.5 amp | 288 | 159 |
| DW935K | 14.4V 5-3/8" Trim Saw Kit | 444 | 237 |

## DEWALT CORDLESS DRILLS

| | | | |
|---|---|---|---|
| DW952K-2 | 3/8" v/spd w/ two 9.6V XR batteries | 284 | 129 |
| DW962K-2 | 3/8" variable speed w/ two 9.6V XR batteries | 330 | 179 |
| DW972K-2 | 3/8" v/spd w/ two 12V batt | 362 | 182 |
| DW904 | 12 volt flashlight | 48 | 29.95 |
| DW991K-2 | 3/8"variable speed w/ two 14.4V XR batteries | 415 | 209 |
| DW994KQ | 1/2" variable speed w/ one 14.4V XR batteries | 458 | 239 |
| | **Above drill kits come w/ charger & steel case!** | | |
| DW991KS-2 | DW991K drill, DW935 trim saw, & case | Sale | 345 |

## DEWALT 18 VOLT CORDLESS TOOLS

| | | | |
|---|---|---|---|
| DW938K | NEW Recipro Saw Kit | 520 | 289 |
| DW995K | 1/2" Drill Kit | 428 | 229 |
| DW997K | 1/2" Drill/Hammer Drill Kit | 454 | 249 |
| DW936K | 5-3/8" Saw Kit | 458 | 249 |
| DW995KS-2 | DW995K Drill, DW936 Saw and case | Sale | 385 |

## HITACHI TOOLS

| | | | |
|---|---|---|---|
| C8FB2 | 8-1/2" Slide Compound Saw | 1169 | 469 |
| C10FC | 10" Mitre Saw | 533 | 199 |
| C10FS | 10" Slide Compound Saw | 1627 | 739 |
| C15FB | 15" Mitre Saw | 1346 | 659 |
| NV45AB | Coil Roofing Nailer | 935 | 399 |
| NT65AA | 15 ga. Brad Nailer 1-1/4 -2-1/2" | 636 | 365 |
| C10RA | NEW 10" Table Saw | 632 | 319 |

## BIESEMEYER FENCES

| | | | |
|---|---|---|---|
| B-50 | 50" Commer. Saw | 443 | 325 |
| | **Above fence has $50.00 rebate !** | | |
| T-SQUARE 52 | 52" Homeshop | 360 | 275 |
| | **Above fence has $20.00 rebate !** | | |
| T-SQUARE 40 | 40" Homeshop | 335 | 255 |
| | **Above fence has $20.00 rebate !** | | |
| T-SQUARE 28 | 28" Homeshop | 325 | 245 |
| | **Above fence has $20.00 rebate !** | | |

## PONY CLAMP FIXTURES

| Model | Description | List | Sale | Lots of 10 |
|---|---|---|---|---|
| 50 | 3/4" Black Pipe | 15.45 | 8.10 | 92.50 |
| 52 | 1/2" Black Pipe | 12.65 | 6.95 | 74.95 |

## BOSCH

| Model | Description | List | Sale |
|---|---|---|---|
| 1587VS | Top Handle "CLIC" Jig Saw | 292 | 139 |
| 1587VSC | 1587VS saw with case | Sale | 149 |
| 1584VS | Barrel"CLIC"Jig Saw | 288 | 139 |
| Bosch Metal Case for above Jig Saws | | | 24 |
| Bosch 30 blade assortment for Jig Saws | | | 28.99 |
| | **1584VS or 1587VS** | | |
| with steel case and 30 Bosch blades | | Sale | 175 |
| 1295DH | 5" Random Orb Palm Sndr. | 145 | 89 |
| 1274DVS | 3"x21" v/spd Belt Sander. | 301 | 175 |
| 1276D | 4"x24" Belt Sander | 379 | 219 |
| 1275DVS | 3"x24" v/s Belt Sndr | 379 | 214 |
| 1276DVS | 4"x24" v/s Belt Sndr | 408 | 229 |
| 1347AK | 4-1/2" Grinder w/cs & acc | 172 | 89 |
| 1194VSR | 1/2" w/ spd Hammer Drill | 272 | 155 |
| 1194VSRK | above Drill w/ case | 303 | 169 |
| 1604A | 1-3/4 HP 2 Handle Router | 269 | 142 |
| 1613EVS | 2HP v/s Plunge Router | 369 | 199 |
| 1615EVS | 3 HP v/s Plunge Router | 536 | 289 |
| 1634VSK | Recip Saw 10.5 amp | 335 | 159 |
| 3310K | 12V T-handle Drill Kit | 345 | 175 |
| 3610K | 14.4V Drill Kit | 354 | 195 |
| 3107DVS | 5" Random Orbit Sander | 165 | 98 |
| 3107DVSK | 3107DVS with case | 195 | 115 |
| 3725DVS | 5" Random Orbit Sander | 256 | 149 |
| 3727DVS | 6" Random Orbit Sander | 266 | 154 |
| B3915 | 10" Slide Compund Saw | 1050 | 559 |
| B7001 | Detail Sander - var/spd | Sale | 89.95 |
| 11224VSR | 7/8" SDS Rotary Drill | 404 | 229 |

## STABILA LEVELS

| | | | |
|---|---|---|---|
| 21990 | NEW 10" Torpedo Level | Sale | 12.95 |
| 24640 | 24" Level w/ hand holes | 62.20 | 43 |
| 24670 | 48" Level w/ hand holes | 79.70 | 55 |
| 24610 | 48" Level w/ angle setter vial | 80 | 55 |
| | ***24610 level comes w/ Free 21990 Torpedo level !*** | | |
| 24680 | 72" Level w/ hand holes. | 145.45 | 99 |
| 27170 | 48" Level w/o hand holes | 71 | 49 |
| 27000 | 78" Level w/o hand holes | 146 | 105 |

## AIRY AIR NAILERS

| Model | Description | List | Sale |
|---|---|---|---|
| 0241SK | Brad Nailer 3/8"-1 9/16" | 180 | 96 |
| 0250SK | Brad Nailer 3/4"-2" | 296 | 164 |
| 0626SK | 1/4" Crown Stapler 3/8"-1" | 194 | 104 |
| | **Above Nailers come w/case, fasteners, oil & wrenches** | | |
| 0565T | Angle Finish Nailer 1"-2-1/2" | 386 | 205 |

## RECORD WOODWORKING VISES

| Model | Jaw\Width | Opening | List | Sale |
|---|---|---|---|---|
| 53E | 10-1/2"\15" | Quick release | 248 | 109 |
| 52D | 7"\8" | Quick release with dog | 169 | 75 |
| 52-1/2D | 9"\13" | Quick release with dog | 231 | 89 |

## PORTA NAILER

| | | | |
|---|---|---|---|
| 401 | Porta Nailer complete | 295 | 209 |
| 501 | Face Nailer complete | 295 | 209 |

## DAVID WHITE

| | | | |
|---|---|---|---|
| LP6-20 | Sight Level package - 20x | 329 | 215 |
| LP6-20XL | LP6-20 w/9056 tripod & 7620 rod | 269 | |
| LT8-300 | Level Transit - 26x | 739 | 489 |
| LT8-300P | above Level w/ optical plum | 869 | 565 |
| LT6-900 | Level Transit - 20x | 419 | 269 |
| ALT6-900A | uto Level - Transit -18x | 666 | 429 |
| ALTP6-900 | above Level with tripod & rod | 799 | 499 |
| AL8-22S | Automatic Level - 22x | 583 | 339 |
| AL8-26S | Automatic Level - 26x | 854 | 379 |
| LL100 | Finish Line Laser Level | 199 | 135 |

## RYOBI SPECIALS

| | | | |
|---|---|---|---|
| RE600 | 3 HP Plunge Router | 500 | 235 |
| BT3000 | 10" Table Saw w/ stand | 1125 | 539 |
| | **Above saw comes with router kit** | | |
| AP12 | 12" Bench Planer | 884 | 379 |
| | **Above comes w/ extra blades & dust hood** | | |
| OSS450 | Oscillating Spindle Sander | 340 | 159 |
| | **Above sander comes with spindles** | | |
| CD125K | 12V cordless Drill w/ 2 batt | 175 | 109 |
| WDS1600 | 16"x32" Drum Sander | 980 | 569 |
| | **Above sander comes with stand** | | |
| DBJ50 | NEW Detail Biscuit Jointer | 114 | 69 |
| Msxe6362 | FEIN Triangle Sander w/spd | | 175 |
| Msx625 | FEIN New Air Triangle Sander | | 195 |
| LPN672 | PONY Air Palm Nailer w/glove | | 89 |
| RTM01 | ROTOZIP Drywall cut out unit. | | 68.95 |

## QUAL-CRAFT PRODUCTS

| | | | |
|---|---|---|---|
| 2200 | Pump Jack | 79 | 58 |
| 2201 | Pump Jack Brace | 30 | 20 |
| 2203 | Pump Jack guard rail holder | 31 | 21 |
| 2204 | Workbench & rail holder combo | 53 | 39 |
| 2500 | Adjustable Roofing Bracket | 9.95 | 7.95 |
| | **Buy any 6 (can be assort.) deduct 10%** | | |
| 2601 | Wall Jack | 167 | 108 |
| | **Lots of 4 deduct additional 10%** | | |

## PORTER CABLE

| | | | |
|---|---|---|---|
| 9444 | Profile Sander Kit | 220 | 99 |
| 9444VS | New v/spd Profile Sander Kit | 207 | 115 |
| 690 | 1-1/2 HP Router 8 amp | 278 | 149 |
| 6931 | Plunge Router Base | 139 | 82 |
| 693PK | 690 and 6931 plus case | Sale | 199 |
| 691 | 1-1/2 HP Router D-handle | 303 | 164 |
| 693 | 1-1/2 HP Plunge Router Base | 338 | 184 |
| 697 | 1-1/2 HP Router/Shaper | 418 | 235 |
| 698 | Heavy Duty Shaper Table | 238 | 135 |
| 352VS | 3x21 v/s Belt Sander w/bag | 321 | 169 |
| 360 | 3"x24" Belt Sander w/ bag | 397 | 214 |
| 360VS | 360 Sander w/ variable speed | 429 | 229 |
| 362 | 4"x24" Belt Sander w/ bag | 412 | 224 |
| 362VS | 362 Sander w/ variable speed | 446 | 239 |
| 9125 | 3-1/4" Planer Kit w/ case | 250 | 145 |
| 9118 | Porta Plane Kit 7 amp | 400 | 235 |
| 505 | 1/2 sheet Pad Sander | 249 | 139 |
| 97549 | Top handle Jig Saw 4.8 amp w/ case & blades | 275 | 144 |
| 330 | Speed Block Sander 1/4 sheet | 120 | 65 |
| 556 | Biscuit joiner w/5556 fence | Sale | 132 |
| 345 | 6" Saw Boss 9 amp | 207 | 118 |
| 9647 | TIGER CUB Recip. Saw | 230 | 134 |
| 9637 | Full var/spd Recip Saw 8 amp | 276 | 148 |
| 7519 | 3-1/4 HP Router 2 Handle | 469 | 255 |
| 7518 | 3-1/4 HP 5 speed Router | 534 | 284 |
| 7539 | 3-1/4HP v/spd Plunge Router | 534 | 279 |
| 7310 | 5.6 amp Laminate Trimmer | 176 | 102 |
| 97310 | Laminate Trimmer Kit comp | 336 | 189 |
| 7335 | 5" Random Orbit Sander | 254 | 135 |
| 97355 | 7335 w/ case & dust pick-up | 274 | 145 |
| 7336 | 6" Random Orbit Sander | 259 | 138 |
| 97366 | 7336 w/ case & dust pick-up | 284 | 149 |
| 332 | Palm Grip Rndm Orb Sander | 133 | 59 |
| 333 | above sander with dust bag | 146 | 65 |
| 334 | 333 Sander with PSA pad | 148 | 65 |
| 335 | NEW Palmgrip Random Orbit Sander with dual flip pad | Sale | 85 |
| 310 | Production Lam. Trimmer | 270 | 154 |
| 347K | 7-1/4" "Framers" Circ Saw with plastic case | 250 | 129 |
| 743K | 7-1/4" "Framers" Circ Saw with case - left hand version | 250 | 129 |
| 9737 | Tiger Recipro Saw | 307 | 158 |

**Porter Cable Pneumatic Nailers**

| | | | |
|---|---|---|---|
| BN125 | Brad Nailer -18 ga. 5/8"- 1-1/4" | 144 | 89 |
| BN200 | Brad Nailer -18 ga. 3/4"-2" | 238 | 139 |
| FN250A | Finish Nailer -16 ga. 1"-2-1/2" | 362 | 189 |
| DA250A | Nailer -15 ga. 1-1/4"-1-1/2" | 412 | 235 |
| FC350 | Framing Nailer - clipped head | 558 | 289 |
| FR350 | Framing Nailer - round head | 558 | 289 |
| RN175 | NEW Roofing Coil Nailer | 504 | 289 |

**NEW Porter Cable Compressors !**

| | | | |
|---|---|---|---|
| CF1400 | 1 HP, 4 gal. Pancake | Sale | 195 |
| CF1540 | 1-1/2 HP, 4 gallon Side Stack | Sale | 295 |
| CF2400 | 2 HP, 4 gal. Side Stack | Sale | 319 |
| 9930 | 9.6V Drill Kit w/ 2 batteries | 284 | 145 |
| 9862 | 12V Drill Kit w/ 2 batteries | 382 | 179 |
| 9862F | 9862 Drill Kit with flashlight | Sale | 189 |
| 9863 | NEW 12V Drill Kit - pistol grip | 319 | 179 |
| 9872 | 14.4V Drill Kit w/ 2 batteries | 424 | 205 |

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

Circle No. 92

## In Bali, Mother Nature helps carve

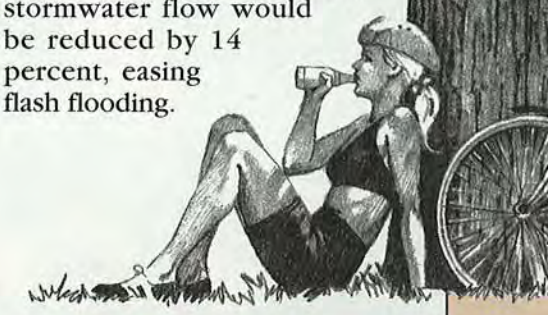
At first glance, the whale carving *below* seems to have involved intricate tool work to achieve the roiling wave forms on the base. Not so. It was Mother Nature.

The carving was purchased in a San Francisco, California, shop, but its origin is faraway Bali, an island off the coast of Java. There, carvers utilize an unusual growth, much like a small burl, that appears on several tree species that harbor a tropical type of mistletoe. The tree tries to fight off the infestation by encircling the mistletoe roots with wood. When the tree or the limb eventually dies, the mistletoe root decays first. This leaves the flowerlike burls of wood to be harvested, cleaned, and used for woodcarving stock.

**Mother Nature had her hand in creating this 3"-high whale carving from Bali.**

## The effects of leafing out

A mature tree's leaves may have a total surface area up to 24 times the size of the ground over which it is growing, according to statistics gathered by Global Releaf, a reforestation program sponsored by American Forests. Besides the cooling effect of this leaf mass, there's another benefit. If 30 percent of an average city's skyline was covered by tree canopy, stormwater flow would be reduced by 14 percent, easing flash flooding.

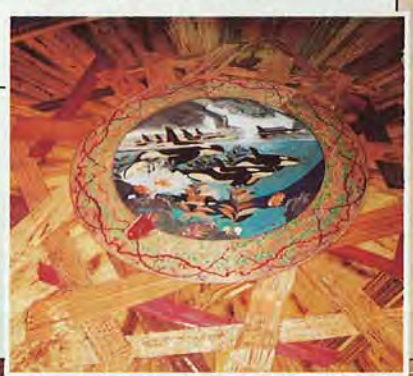


## Floors as fine art

As a means of decorating furniture, marquetry goes back to the 15th century in Europe. The technique developed even earlier in the Orient and Middle East. But as far as using intricate marquetry to beautify hardwood floors, the work of Californian David Marzalek may be a milestone.

David owns and operates D.M. Hardwood Designs in Mission Viejo. And his intricately laid handiwork has earned "Floor of the Year" awards from the National Wood Flooring Association.

"I taught myself this form of marquetry years ago because I knew of no one who would share the techniques," says Dave. He relies on figured maple, quartersawn oak, sycamore, and even beech for the "field" in his floors, then turns to exotic and dyed woods for the inlays that he designs and executes. For durability, all the wood he uses must be standard, ¾" flooring thickness. And each marquetry design is first glued up before it's inlaid into the floor.



**Installed in the intricately laid floor, *right,* the whale design becomes a focal point.**

**Flooring marquetry expert David Marzalek named the design in the close-up *below* "Orcas' Journey." It measures 3' across.**

Photographs: David Marzalek; Dean Tanner  Illustration: Jim Stevenson

THE NEW COBALT STEEL JIGSAW BLADES FROM DEWALT

# GREATER PRECISION. SUPERIOR FINISH. (AS IF LASTING FIVE TIMES LONGER ISN'T ENOUGH.)

The New DEWALT® Cobalt Steel Jigsaw Blades have been engineered to deliver superior precision and finish while lasting up to 5X longer than any other jigsaw blade. The difference is all in the teeth. An exclusive reinforced tooth design puts more steel behind each tooth for more precise cuts and longer life. With DEWALT's new stronger blade body, following your cutting line is easier. You get less bending and accurate 90 degree cuts. Cleaning up is easy because the side chip path gullet clears the cut leaving a virtually splinter-free surface. And DEWALT's Jigsaw Blades are made from a premium grade of Cobalt Steel ensuring maximum durability and the longest cutting life.

But don't take our word for it, put our new jigsaw blades to the test yourself. **Call 1-800-4-DEWALT, for your free sample.***

Cutting in 3/4" melamine with T-Shank, 6 TPI ground-tooth tapered side blades.

DEWALT®
High Performance Industrial Tools

*While supplies last.

THE NEW WOODWORKING SAW BLADES FROM DEWALT

# CUTS LIKE A BLADE, FINISHES LIKE A SANDER.

When your reputation rides on every cut, precision is not an option. It's a necessity. That's why DEWALT® has created the new Series 60™ Premium Woodworking Saw Blades. DEWALT starts with a laser cut plate that's precision balanced and tensioned to deliver a perfectly flat blade. Precision tuned anti-vibration slots reduce blade resonance delivering a super smooth finish on all of your work surfaces. We also take extra care in grinding our carbide tips. We polish our tips to a mirror finish using a 600 grit diamond wheel. These razor sharp cutting edges slice cleanly through the most difficult materials with precision and accuracy. Our extra large C-4 corrosion resistant micro-grain carbide stays sharp longer and can be resharpened up to 20 times ensuring the longest possible service life. We are so certain that our blades will deliver the finest quality cut and finish, we back up every one with a 30 Day Satisfaction Guarantee. For more information on DEWALT Woodworking Blades call 1-800-4-DEWALT.

DEWALT®
High Performance Industrial Tools

# The Home Depot and DeWalt Introduce The Top of The Class

**The DW744 10" Portable Table Saw** adjusts smoothly and easily for a full 24 1/2" ripping capacity.

**The DW788 20" VS Scroll Saw** reduces vibration and noise, giving you more comfort and greater precision than ever before.

**The DW733 12 1/2" Portable Thickness Planer** features a four-column head lock which stabilizes your work, greatly reducing snipe.

**The DW708 12" Sliding Compound Miter Saw** allows you to bevel left and right past 45° all the way to 48°, eliminating the need to flip material.

The Home Depot proudly introduces the best tools in their class; the new machinery from DeWalt. Dedicated to perfection, DeWalt now brings you even greater accuracy, expanded productivity, portable convenience and outstanding comfort. When you come to The Home Depot, you'll find out why more people who make a living with their tools buy their tools from The Home Depot... the place where people who know their stuff buy their stuff.™

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Better Homes and Gardens®

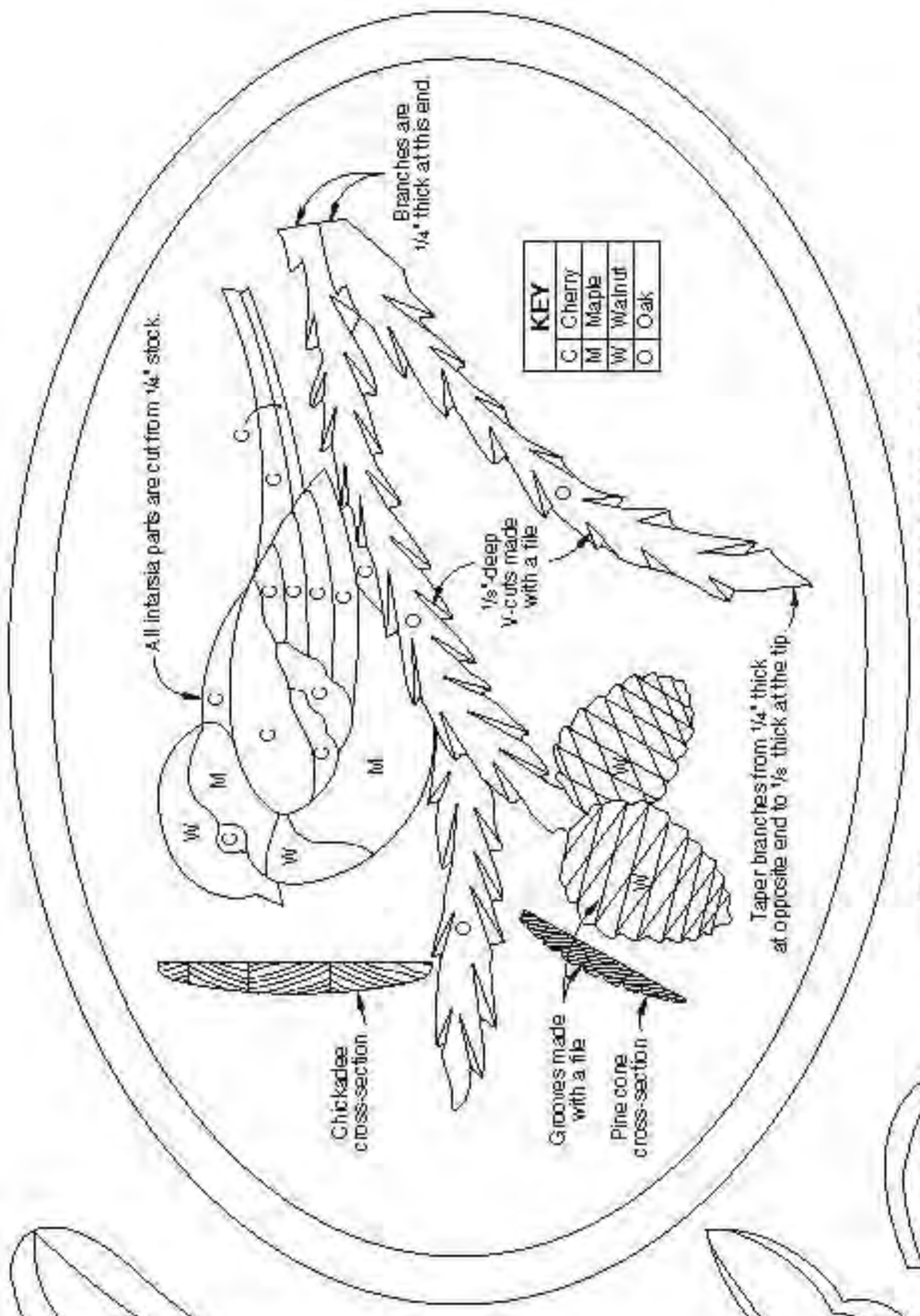
# WOOD® PATTERNS®

**Full-sized for your woodworking convenience**

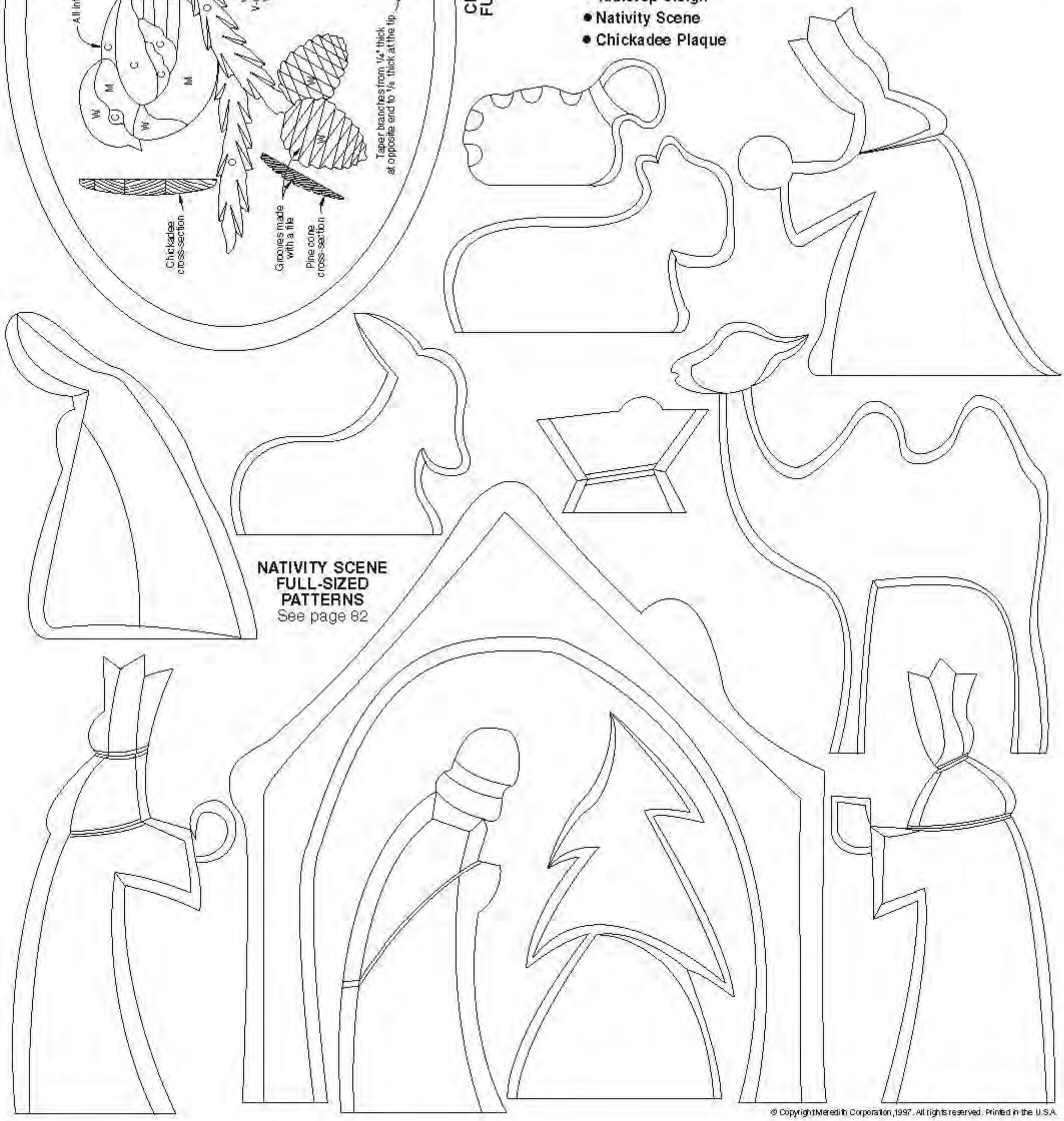
**DECEMBER 1997** **ISSUE 101**

Dear Reader: As a service to you, we've included full-sized patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

- **Tabletop Sleigh**
- **Nativity Scene**
- **Chickadee Plaque**


KEY
C Cherry
M Maple
W Walnut
O Oak
Branches are 1/4" thick at this end
All intarsia parts are cut from 1/4" stock.
1/8"-deep V-cuts made with a file
Taper branches from 1/4" thick at opposite end to 1/8" thick at the tip
Chickadee cross-section
Grooves made with a file
Pine cone cross-section

**CHICKADEE PLAQUE FULL-SIZED PATTERN**
See page 90



**NATIVITY SCENE FULL-SIZED PATTERNS**
See page 82

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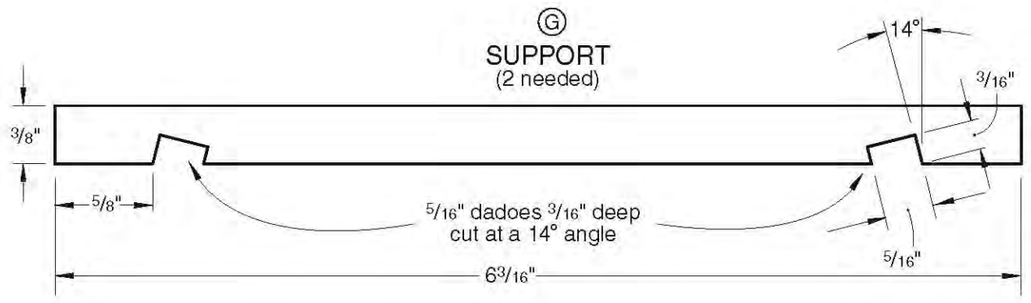
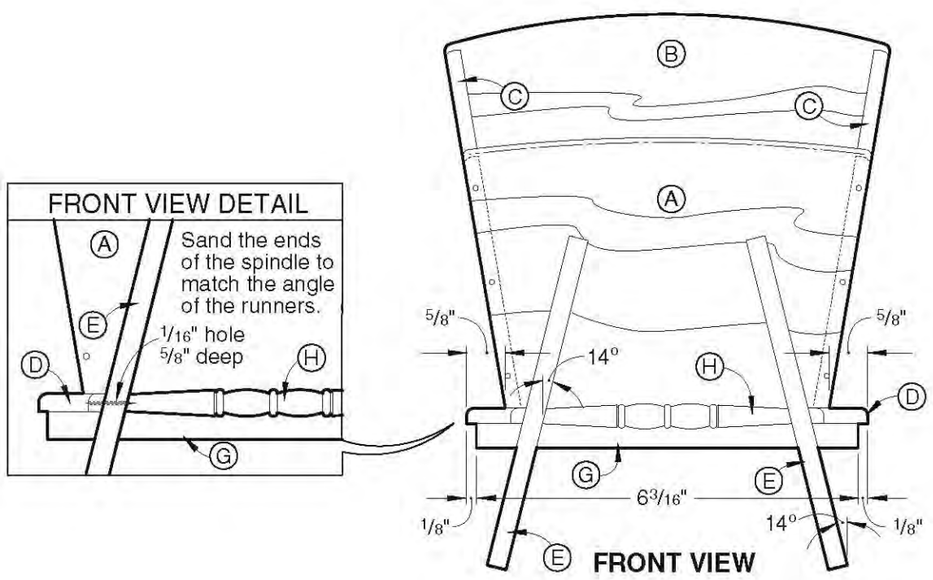
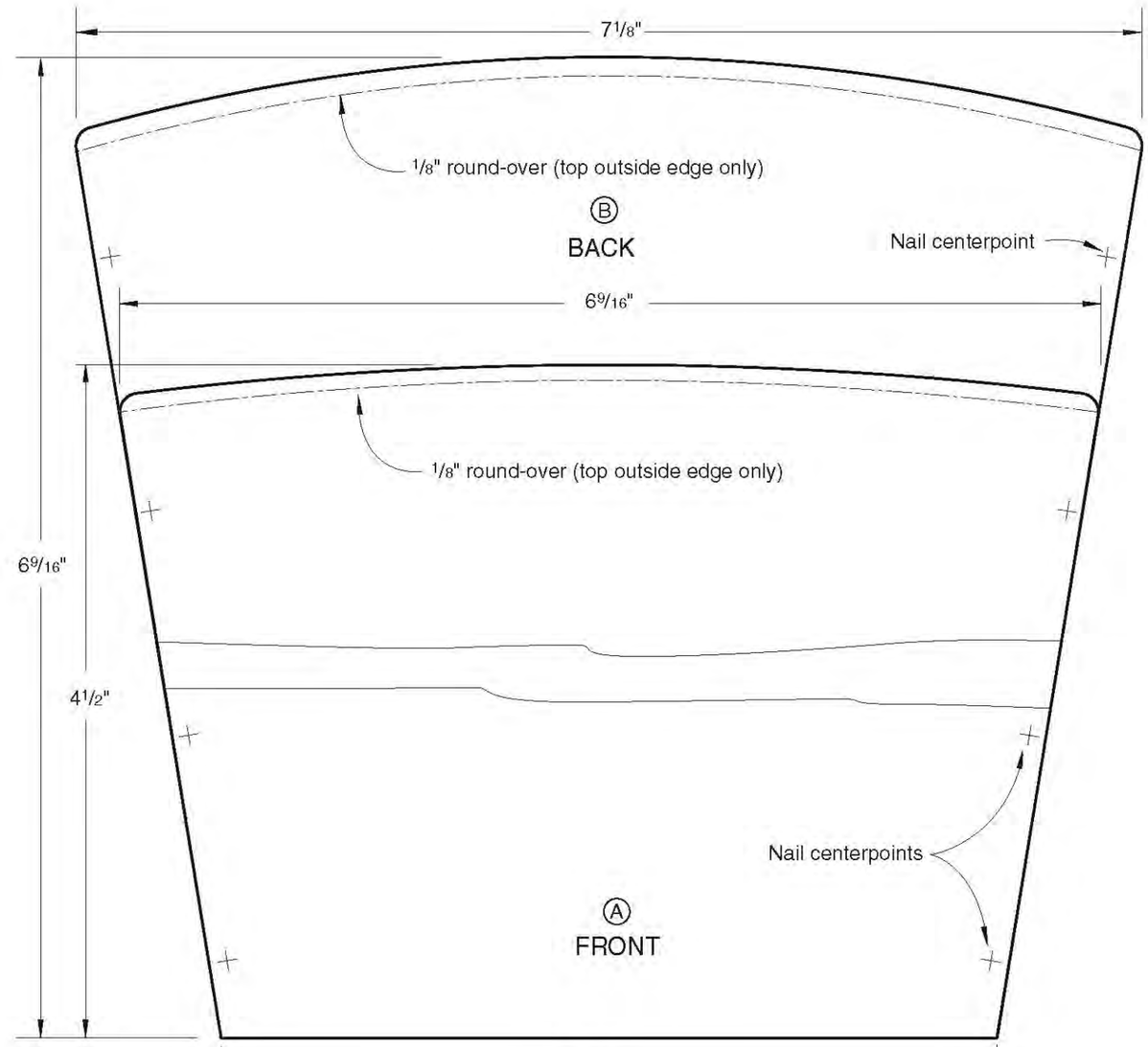
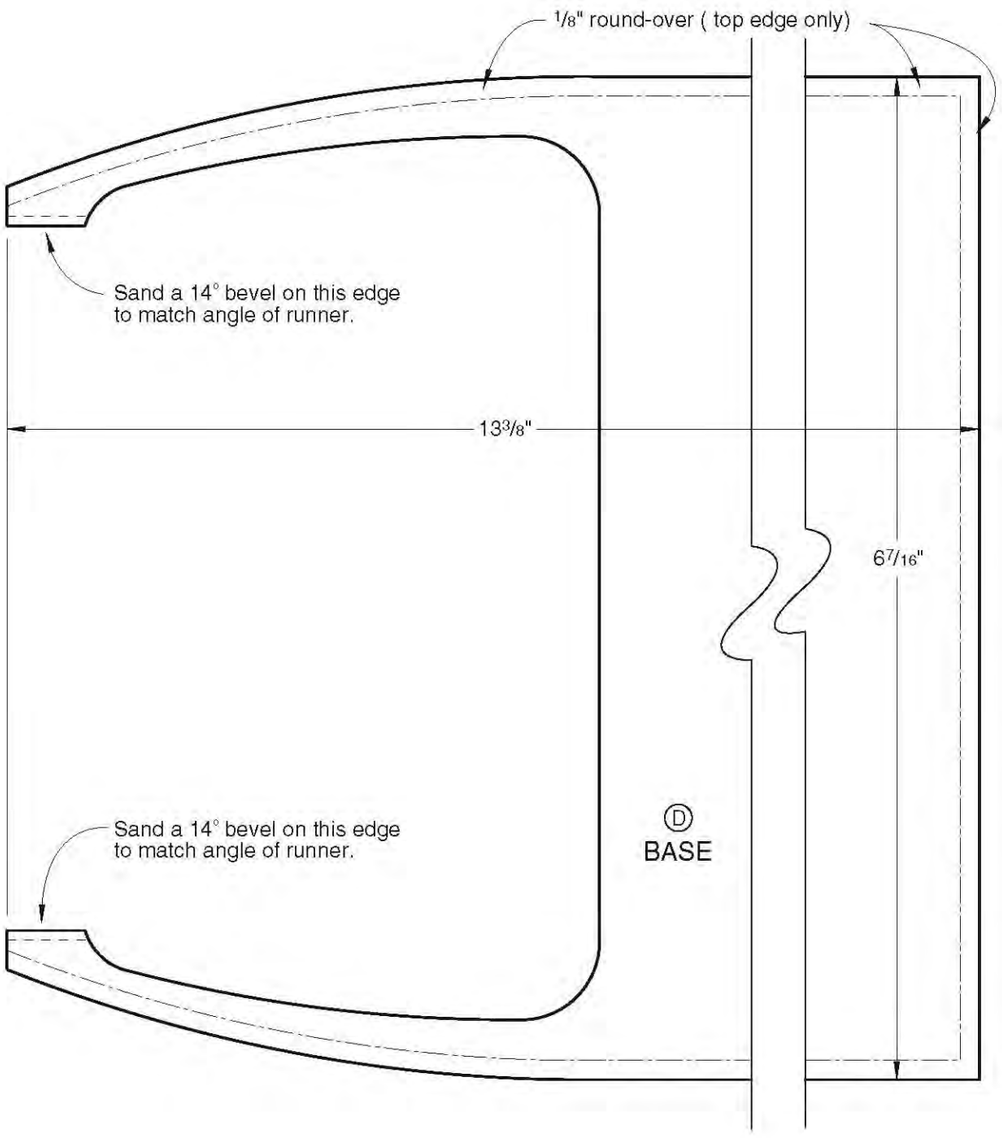
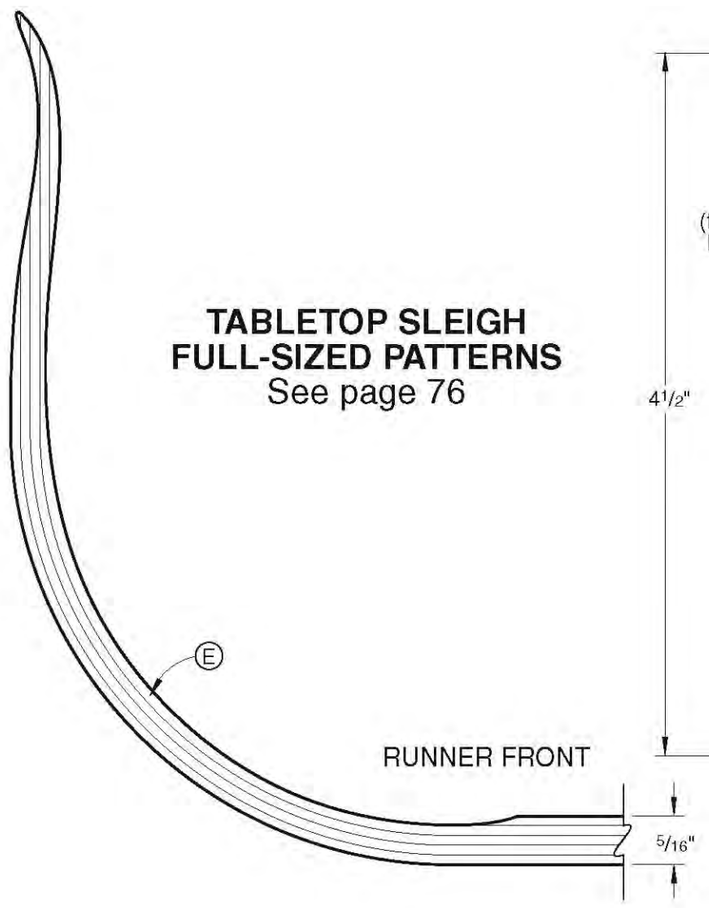
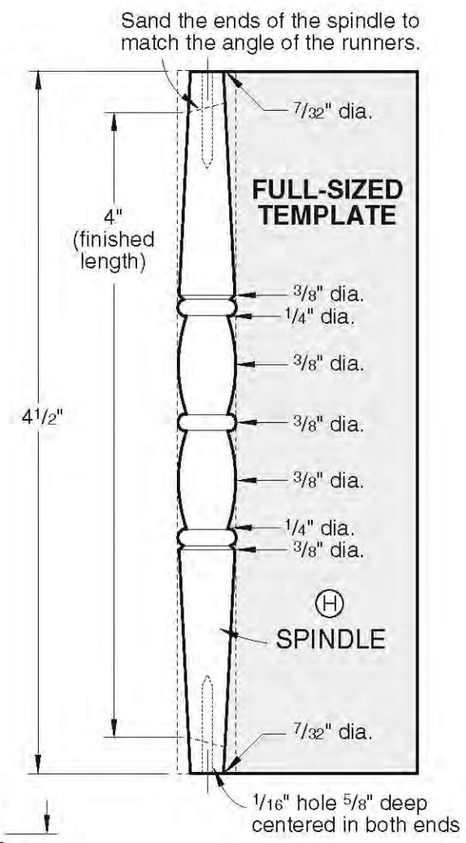
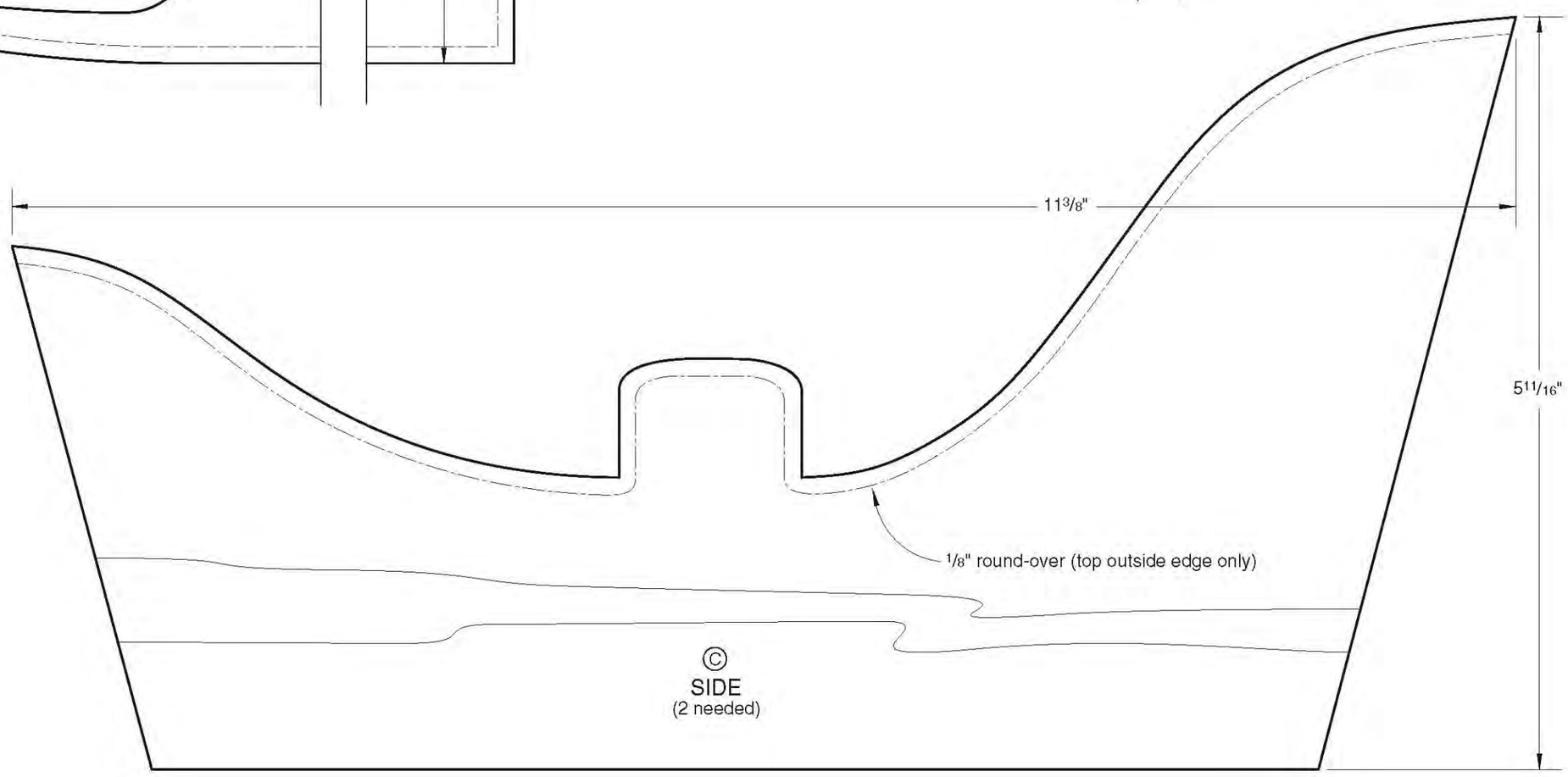




1/8" round-over ( top edge only)
Sand a 14° bevel on this edge
to match angle of runner.
13 3/8"
6 7/16"
Sand a 14° bevel on this edge
to match angle of runner.
Ⓓ
BASE

**TABLETOP SLEIGH**
**FULL-SIZED PATTERNS**
See page 76